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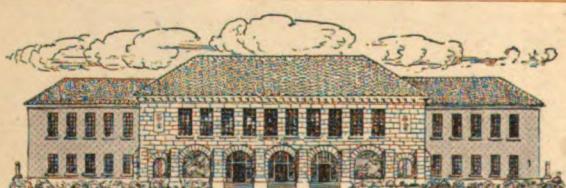
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EDITED BY

G. STANLEY HALL

President of Clark University and Professor of Psychology and Education

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VOL. XXVI

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No. 1

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## MALNUTRITION AND HEALTH EDUCATION<sup>1</sup>

By DAVID MITCHELL, Bureau of Educational Experiments

### THE MEASUREMENT OF THE CHILDREN

Sam stepped on the scales and registered a weight of 62 pounds. He was 53 inches tall. According to norms established by the investigations of Burk, Boas, etc., he should have weighed approximately 69 pounds. He was seven pounds underweight; that is, he was over 10% lighter than he should have been when compared with the average boy of his height. Another Sam, stepping on the scales, registered 118 pounds. He was 58 inches tall and, according to the normal standards, should have weighed not more than 85 pounds. He was 33 pounds, that is, more than 38% overweight.

In this way 894 children had their percentage of overweight or underweight established. The distribution of 800 children is shown in Table I. The first column gives the series of per-

---

<sup>1</sup> The Bureau of Educational Experiments secured the services of Dr. William R. P. Emerson in the organization and conduct of the experiment, results and conclusions from which are presented in this report. The "Nutrition Classes" were organized in P. S. 64, Manhattan, New York City, the Principal of which is Mr. Louis Marks. The first sessions were held in February, 1918, and were continued approximately four months. In carrying out the experiment, the Bureau had the cordial coöperation not only of the principal and his assistants and teachers, but also of Mr. John C. Gebhart of the School Lunch Committee, through which provision was made for the meals; of Miss C. I. MacColl of Christodora House where arrangements were made for the service of the meals and for rest rooms for the daily rest-periods. To each of these coöoperating in the conduct of the experiment The Bureau of Educational Experiments wishes to express its appreciation.

centages, beginning with 67% overweight and then by steps of 5% and 2% until the average weight for height is reached. The latter group we have indicated as ranging from 1% overweight to 1% underweight. The series continues in steps of 2% and 5% for all the children underweight. In the succeeding columns of this Table is shown the distribution of the various grades and the total for the four grades considered. In the 7th grade there were 173 children; in the 6th, 245; in the 5th, 127; and in the 1st grade, 255—making a total of 800.

TABLE I  
DISTRIBUTION OF CHILDREN ACCORDING TO PERCENTAGE OVER AND  
UNDER WEIGHT

Percentage	Grade VII.	Grade VI.	Grade V.	Grade I.	Total
67.....	.....	...	...	1	1
44-49.....	1	...	1	...	2
39-44.....	...	...	...	...	...
34-39.....	2	1	...	...	3
29-34.....	...	1	...	1	2
24-29.....	...	4	...	...	4
19-24.....	3	2	...	1	6
17-19.....	1	...	2	...	3
15-17.....	4	2	1	1	8
13-15.....	3	8	3	2	16
11-13.....	7	5	3	2	17
9-11.....	3	8	4	6	21
7-9.....	14	9	7	13	43
5-7.....	8	11	9	24	52
3-5.....	17	19	11	24	71
+1-3.....	13	23	13	27	76
-1-1.....	16	31	6	35	88
-1-3.....	23	28	13	24	88
3-5.....	22	24	16	29	91
5-7.....	11	30	11	22	74
7-9.....	8	12	10	14	44
9-11.....	6	10	4	13	33
11-13.....	7	6	5	11	29
13-15.....	3	2	2	...	7
15-17.....	1	5	1	3	10
17-19.....	...	4	3	2	9
19-24.....	...	...	...	...	...
24-29.....	...	...	1	...	1
29-34.....	...	...	1	...	1
Total.....	173	245	127	255	800

Table II shows a similar distribution for two special classes. That group designated as "Specials" included children who had been examined by a psychologist and rated as exceptionally bright children. There were 69 children included in this

group. The other special class was the "Open Air," which included 25 children.

TABLE II  
DISTRIBUTION OF CHILDREN ACCORDING TO PERCENTAGE OVER AND  
UNDER WEIGHT

Percentage	Specials	Open Air
67 .....	..	..
44-49.....	..	..
39-44.....	..	..
34-39.....	..	..
29-34.....	1	..
24-29.....	..	..
19-24.....	1	..
17-19.....	..	..
15-17.....	..	..
13-15.....	..	..
11-13.....	2	..
9-11.....	2	..
7- 9.....	1	1
5- 7 .....	2	2
3- 5 .....	12	..
+1-3 .....	3	3
1-1 .....	9	2
-1-3 .....	8	1
3-5 .....	3	4
5-7 .....	6	5
7-9 .....	11	1
9-11.....	2	2
11-13.....	2	2
13-15.....	2	..
15-17.....	2	1
17-19.....	..	..
19-24.....	..	1
24-29.....	..	..
29-34.....	..	..

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*Which Children Are Undernourished.* Clinical experience has led us to the conclusion that a child who is chronically 7% or more underweight might be considered an ill child. We have, therefore, divided the children into three groups. The first group includes all those children who are 7% or more overweight; the second, children from 7% overweight to 7% underweight; and the third group all children 7% or more underweight. Tables III and IV show the grouping for the regular grades and the special groups respectively. In the 7th grade more than 14% are underweight; in the 6th grade nearly 16%; in the 5th grade over 21%; and in the 1st grade nearly 17%. Considering these four grades as rep-

representative of the entire school population, 16.8% of all our children are 7% or more under the weight which they should be for their height. This means that in New York City, with approximately 1,000,000 school children, 168,000 are undernourished.\*

TABLE III  
PERCENTAGE OF OVERWEIGHT AND UNDERWEIGHT CHILDREN

		Grade VII.	Grade VI.	Grade V.	Grade I.	Total
Children 7% or more overweight	Number. 38 Per Cent. 22.0	40 16.3	21 16.5	27 10.6	126 15.8	
From 7% overweight to 7% underweight	Number. 110 Per Cent. 63.6	166 67.8	79 62.2	185 72.5	540 67.4	
Children 7% or more underweight	Number. 25 Per Cent. 14.4	39 15.9	27 21.3	43 16.9	134 16.8	
Total	Number. 173 Per Cent. 100.0	245 100.0	127 100.0	255 100.0	800 100.0	

The data of Table IV show a considerably higher percentage of underweight children. This condition might be expected with the children of the "Open Air" class since they were primarily selected because they were anemic or there was a history of tuberculosis in the family. It is rather surprising, however, to find a similar situation existing among the children of the other special classes. These children being among the brightest in the school, one might expect to find them among the best nourished. Nevertheless, 27.5% of these children are 7% or more underweight. In the "Open Air" class only  $\frac{1}{2}\%$  more than this are as much underweight.

TABLE IV.  
PERCENTAGE OF OVERWEIGHT AND UNDERWEIGHT CHILDREN

		Specials	Open Air
Children 7% or more overweight	Number.... 7 Per Cent.... 10.1	1	4.0
From 7% overweight to 7% underweight	Number.... 43 Per Cent.... 62.4	17	68.0
Children 7% or more underweight	Number.... 19 Per Cent.... 27.5	7	28.0
Total	Number.... 69 Per Cent.... 100.0	25	100.0

\*Reports have been current this year that as many as 120,000 children in New York are undernourished and 240,000 more on the borderline of undernourished.

## THE NUTRITION CLASSES

The following classification shows the number of the under-nourished children who were treated in our various nutrition classes :

7th grade.....	23
6th grade.....	28
5th grade.....	20
1st grade.....	26
Specials.....	17
Open Air.....	11

*Conditions Offered.*—We may group the conditions of treatment offered for these children under five general heads : The first considers instruction in health habits. These include the questions of rapid eating ; using water to wash down the unmasticated food ; the use of stimulants such as tea and coffee ; eating when excessively fatigued ; eating candy before meals ; irregularity of meals ; and the periods of sleep.

The second condition is the removal of all physical defects which interfere with the processes of nutrition. The removal of carious teeth or their repair, along with the removal of any naso-pharangeal obstruction is quite essential. This is a provision, the successful carrying out of which depends on various factors. The consent of the parents must be obtained. Some parents are quite indifferent to the necessity of freeing the child from such handicaps. The services of a surgeon or a dentist are required, and with the present demands on such services, they are difficult to obtain. With our cases about one-third of the necessary tonsil and adenoid operations was performed.

The third condition is that of frequent periods of rest. These under-nourished children are unable to store up in one rest-period sufficient energy or vitality to carry them through the day. It is necessary that a further opportunity to recuperate should be provided to enable them to stand the stress of a day's work. For this purpose a half-hour rest-period may be arranged during the morning.

The fourth condition is that food should be taken at frequent intervals rather than in great quantities at infrequent intervals. Four or five small meals per day may be much more beneficial than three large ones of equal caloric value. Lunch may be given to these children midway between the ordinary morning and noon meals.

The fifth condition which may be provided is that of direct feeding. It has been assumed in many instances that the reason for under-nourishment or malnutrition is inability to procure the necessary food. If this is the condition, food should

be supplied. The provision of a mid-day meal is the logical solution since it is at this time the schools are more directly responsible for the children.

Not all of these provisions were made for each of the six nutrition classes. If we indicate the five conditions by the five following terms: (1) instruction; (2) physical care; (3) rest; (4) lunch; (5) mid-day dinner; we can classify the conditions provided for the various groups in the following way:

7th grade—instruction, physical care, rest, and lunch.

6th grade—instruction, physical care, rest, lunch, and mid-day dinner.

5th grade—mid-day dinner.

1st grade—instruction, physical care, *advised to take rest and lunch.*

Specials—instruction, physical care, lunch and mid-day dinner.

Open Air—instruction, physical care, rest and lunch.

The chief consideration in making these arrangements was to determine the value of feeding as compared with that of instruction in health habits. The mid-day dinner provided for the 6th grade along with the other conditions and for the 5th grade as the only treatment which they received, has a caloric value of approximately 1,000. The lunch provided for the 6th grade and the other classes consisted of 300 calories.

*Results.*—The results obtained with these various methods of procedure are summarized in Tables V to X. In Table V, the increase in weight by pounds and percentages is shown. The total gain for the children in Grade 7 was 72 pounds. The expected gain<sup>2</sup> for the period during which the children were in the nutrition class (approximately 19 weeks) was 64.8 pounds. The net gain made by the children was therefore 7.2 pounds. The percentage of gain in excess of normal is 11.1. The children in Grade 6 for a similar length of time gained 109 pounds, which is 18.1 pounds more than the expected gain of 89.9 pounds for the period. The percentage of gain in excess of normal for the 6th grade is 20.1. The children in Grade 1 made very satisfactory progress. Their total gain was 55.7 pounds as compared with an expected gain

<sup>2</sup> The expected gain is calculated in the following way: The average yearly increase as given in the table of normal weights is used as a basis and a proportional increase for the period of the nutrition classes calculated. The normal increase for a 12-year-old boy is eight pounds. In the 19 weeks he would be expected to gain approximately three pounds. A 15-year-old boy should gain 14 pounds in a year and in the 19 weeks he would be expected to gain approximately five pounds. The expected gain thus refers to the normal or average increase for children of that particular age during the specified period.

of 40.5. This leaves them with a net gain of 12.2 or a percentage of gain in excess of normal of 37.5.

TABLE V  
INCREASE IN WEIGHT BY POUNDS AND PERCENTAGES

Class	Grade VII.	Grade VI.	Grade V.	Grade I.	Total
Total gain.....	72.0	109.0	6.0	55.7	242.7 lbs
Normal gain.....	64.8	89.9	23.2	40.5	218.4 "
Net gain.....	7.2	18.1	-17.2	15.2	19.3 "
Percentage of gain in excess of normal	11.1	20.1	-74.1	37.5	8.8%

The 5th grade, to which dinner alone was provided, shows the poorest record. In this group 20 children were included in the beginning. At the end of the period 15 of them were weighed the second time; the remaining five were not present for the second weighing. Their total gain for the period was six pounds. Their expected gain was 23.2 pounds. This means that the children of the 5th grade, to whom a sufficiently large mid-day meal was given, gained at only one-quarter of the normal rate. They were 78.5% behind what was expected of them during the period of the nutrition class.

The result for all the groups is shown in the final column. Their total gain was 242.7 pounds, while the normal gain was 218.4. This made an excess of 19.3 pounds, or a percentage of gain in excess of normal 8.8. If we exclude the 5th grade results from this Table, we have a much more promising result. The total gain for the other grades is 236.7 pounds, as compared with an expected gain of 195.2 pounds. This means an excess gain of 41.5 pounds, or a percentage of gain in excess of normal of 21.3. In other words, these children, to some of whom dinner was not provided but all of whom were given instruction in health habits, and for some of whom certain physical defects were removed, gained over 20% faster than the average rate; while the children of Grade 5, who were supposed to have sufficient food to nourish them, not only gained nothing in excess of normal, but actually came out with only about one-quarter of the gain expected of them during the time they were given the meals.

Table VI shows similar data for the "Specials" and the "Open Air" class. The children of the "Open Air" class made a total gain of 13.7 pounds; whereas, their normal gain would be 23.2. They thus gained at only about one-half the rate expected of them. For this condition there is a partial explanation in the fact that the nutrition class was carried on while all the other children in the "Open Air" class were in the room. The class method of instruction and the spirit of cooperation

and competition could not well be worked. There was a constantly disturbing element in the presence of children who did not need and were not interested in the nutrition work. The result with the "Specials", however, is highly gratifying. The total gain for the 17 children was 61.6 pounds. Their expected gain was 43.2 pounds, giving a net gain of 18.4 pounds, or a percentage of gain in excess of normal of 42.6. These children gained almost 50% more than the average expected gain.

TABLE VI  
INCREASE IN WEIGHT BY POUNDS AND PERCENTAGES

Class	Specials	Open Air
Total gain.....	61.6 lbs.	13.7 lbs.
Normal gain.....	43.2 "	23.2 "
Net gain.....	18.4 "	-9.5 "
Percentage of gain in excess of normal.....	42.6%	-40.9%

Tables VII and VIII show the number of children gaining either more or less than normal. Table VII includes the four regular grades; Table VIII the two special groups. It will be seen that in the four regular grades, seven children weighed less at the end of the nutrition period than they had at the beginning. Including these children, 42 gained less than was expected. Fifty children gained more than the normal rate of gain.

It is necessary again to consider the relation of the children of the 5th grade in this calculation. Out of the 15 children weighed the second time, four of them weighed less than at the beginning. A total of 12 children had made less than normal gain, while only three had exceeded this gain. Of the 77 children in the other three grades, only three had lost weight; 30 gained less than normal, while 47 had increased more rapidly than the average rate.

TABLE VII.  
NUMBER OF CHILDREN GAINING

Class	Grade VII.	Grade VI.	Grade V.	Grade I.	Total
Children lost weight....	1.	2.	4.	0.	7
Gained less than normal	13.	12.	12.	5.	42
Gained more than normal	10.	16.	3.	21.	50

TABLE VIII.  
NUMBER OF CHILDREN GAINING

Class	Specials	Open Air
Children lost weight....	0.	3.
Gained less than normal.....	3.	7.
Gained more than normal.....	12.	4.

The ratio of gain is always the important consideration, and it is desirable to know how many of these children gained at the varying ratios. Tables IX and X show this result with the regular grades and the special classes respectively. These Tables are divided in three sections: A, B, and C. Section A includes those children who actually lost weight during the time the nutrition work was carried on. In the 7th Grade one child's gain was between 125 and 150% less than normal; that is, this child who was expected to gain 3.4 pounds during the time he was in the nutrition class, actually lost 1.2 pounds. The loss of 1.2 pounds added to his normal expected gain makes a total loss of 4.6 pounds. This is a loss of 135% of normal gain.

TABLE IX  
PER CENT GAIN IN EXCESS OF NORMAL

Per Cent	Grade VII. Grade VI. Grade V. Grade I.				Total
	Number of Children				
Over 150.....	..	..	1	..	1
150-125.....	1	1	1	0	3
A 125-100.....	0	1	2	0	3
100- 75.....	3	0	1	1	5
75- 50.....	4	3	5	2	14
B 50- 25.....	2	2	2	1	7
25- 0.....	3	5	0	1	9
0- 25.....	2	4	0	7	13
25- 50.....	1	1	2	2	6
50- 75.....	0	4	1	4	9
C 75-100.....	2	3	0	3	8
100-125.....	1	0	0	1	2
125-150.....	0	3	0	1	4
Over 150.....	4	1	0	3	8

TABLE X  
PER CENT GAIN IN EXCESS OF NORMAL

Per Cent	Specials		Open Air Number of Children
	Number of Children	Number of Children	
Over 150...	..	1	
A 150-125...	0	0	
125-100...	0	2	
B 100- 75...	2	0	
75- 50...	0	2	
50- 25...	3	2	
25- 0....	0	0	
0- 25....	5	1	
25- 50....	1	0	
50- 75....	1	2	
C 75-100....	0	1	
100-125....	2	0	
125-150....	0	0	
Over 150...	3	0	

In Section B of these two Tables is shown the number of children who made a gain, but not as great a gain as was expected. These children increased from 0% to 100% of their expected gain. Two children of the 7th grade are shown as failing to gain from 25 to 50% of their expected gain. One of these children was expected to gain 4.4 pounds. He actually gained only 3.1 pounds. That is, he gained 1.3 pounds or 30% less than was expected.

In Section C are arranged those children who gained in excess of normal. There is one child in the 7th grade listed as gaining from 25 to 50% in excess of normal. This child was expected to gain 3.8 pounds, and he actually gained 5.2 pounds. He made an excess gain of 1.4 pounds, or a gain in excess of normal of 37%. In this same grade there are four children listed as gaining over 150% in excess of normal. The per cents of gain in excess of normal for these four children were 207, 209, 216 and 655. The child who gained 655% in excess of normal had been in the clinic only seven weeks, in which time he was supposed to gain 0.9 of a pound, and he actually gained 6.8 pounds. In the beginning he was one of a few children who were somewhat less than 7% underweight. His actual weight was 78.3 pounds, while he should have weighed 83.2 pounds. He was 5% underweight for his height. The child who gained 216% was in the clinic 12 weeks. He was expected to gain 2.5 pounds and actually gained 7.9 pounds. This child in the beginning was 15% underweight, having weighed 120.3 pounds when he should have weighed 142.7 pounds.

The final column of Table IX indicates the total number of children making the various percentages of gain in excess of normal. Of the 50 children who made a gain in excess of normal, 13 of them made a gain of from 0% to 25%, and eight of them made a gain of over 150% in excess of normal.

The distribution shown in Table X is for the "Open Air" class and the "Specials." Of the 11 children in the "Open Air" class three of them show a failure to gain of from 100% to over 150% of the normal gain. Only four show an excess gain of 0% to 100%. The one child shown as gaining from 75 to 100% in excess of normal actually gained just double the expected amount. In 14 weeks he was expected to gain 1.4 pounds; he gained 2.8 pounds. The distribution for the "Specials" shows up in quite marked contrast. Twelve of the 17 children show gains ranging from 0% to over 150% in excess of normal. Three of these 12 children gained more than 150% in excess of normal.

## WHY CHILDREN GAIN OR DO NOT GAIN

*Enlarged Tonsils and Adenoids.* The presence of enlarged tonsils and adenoids apparently has a marked effect upon the nutrition of a child. Of the children examined 69 were recommended to have an operation for the removal of tonsils or adenoids or both. Four children were not examined and 32 were found to have a clear record. The percentage of those needing operation is very high. Out of the 105 children included in the classes, 69 suffered from obstruction in the breathing passages. This is 66% of the total number. Two out of every three under-nourished children fail to get sufficient oxygen. Of those who were recommended to have an operation performed, 49 failed to have the recommendation carried out. A comparison of the gain of these 49 with the gain of the 32 who did not need an operation is shown in Table XI. The first part of the table shows the gain of the tonsil and adenoid cases. In the five groups, including the 7th, 6th, and 1st grades, with the "Special" and "Open Air" classes, four children lost weight; 18 made less than normal gain, 24 gained from 1 to 100% in excess of normal; and three gained over 100% in excess of normal. The second part of

TABLE XI.

## GAIN OF CHILDREN WITH TONSILS AND ADENOIDS COMPARED WITH THE GAINS OF CHILDREN WITHOUT ENLARGED TONSILS AND ADENOIDS

## ADENOID AND TONSIL CASES

Grade	Lost Weight	1—100% Over 100%		Total
		Less Than Normal Gain	More Than Normal Gain	
VII.....	1	7	3	11
VI.....	2	3	2	7
I.....	..	5	15	21
Specials.....	..	1	2	5
Open Air.....	1	2	2	..
<b>Totals.....</b>	<b>4</b>	<b>18</b>	<b>24</b>	<b>49</b>
<b>Per Cent.....</b>	<b>8.2</b>	<b>36.7</b>	<b>49.0</b>	<b>100</b>

## WITHOUT ADENOIDS OR ENLARGED TONSILS

Grade	Lost Weight	1—100% Over 100%		Total
		Less Than Normal Gain	More Than Normal Gain	
VII.....	..	1	2	5
VI.....	..	4	4	11
I.....	..	..	1	3
Specials.....	..	3	4	9
Open Air.....	1	1	1	..
<b>Totals.....</b>	<b>1</b>	<b>9</b>	<b>12</b>	<b>32</b>
<b>Per Cent.....</b>	<b>3.1</b>	<b>28.1</b>	<b>37.5</b>	<b>100</b>

the Table deals with children who had no need of an operation. In this group only one child lost weight. Nine made less than normal gain; 12 made a gain of from 1 to 100% in excess of normal; and ten a gain of over 100% in excess of normal. These numbers do not show the condition quite accurately since in the second group there are only 32 children, and in the first group there were 49. The percentage as shown at the end of each section indicates the condition more accurately. Of the children who gained from 1% to 100% in excess of normal, there were 37.5% of those without tonsils and adenoids as compared with 49% of those having this breathing obstruction. But of those children who gained over 100% in excess of normal, there were 31% without enlarged tonsils and adenoids and only 6% of those who suffered from this obstruction in breathing. Combining the percentages of those who gained more than normal, we find there were 68.8% of those who did not need an operation and only 55.1% of those for whom an operation was necessary.

A somewhat clearer indication of the effect of this nasopharyngeal obstruction may be obtained from studying Table XII. In the second column there is shown the percentage of gain for five weeks previous to an operation for the removal of enlarged tonsils and adenoids, and in the third column the percentage of gain for a five weeks' period following the operation. Before the operation seven children during the five-week period lost weight and 12 gained. During the five-week period after the operation only one child lost weight whereas 18 gained. One other child had an operation for the removal of this breathing obstruction, but he is not included in this calculation since at the same time he was suffering from an attack of La Grippe, and his gain in the following period is probably largely due to the recovery from this sickness. During the five weeks previous to the opera-

TABLE XII.  
PER CENT OF GAIN OF CHILDREN BEFORE AND AFTER TONSIL AND ADENOID OPERATION

No. of child	Before	After	No. of child	Before	After
1.....	2.4	1.4	11.....	-1.3	2.5
2.....	3.6	8.2	12.....	1.1	3.3
3.....	1.7	1.0	13.....	0.6	1.9
4.....	0.5	5.6	14.....	-0.9	3.4
5.....	-0.3	1.5	15.....	3.3	4.6
6.....	-1.3	3.4	16.....	5.8	-1.3
7.....	0.6	2.5	17.....	0.9	4.0
8.....	-2.8	5.8	18.....	-0.3	4.7
9.....	2.8	3.9	19.....	-1.7	1.5
10.....	0.9	6.4			

tion and sickness, he had gained at the rate of only 0.3%. In the five weeks following his operation and three week-period of illness, he gained at the rate of 12.7%. The other nineteen children previous to the operation gained at the rate of 0.8%; but during the five weeks following the operation they gained at the rate of 3.4%. These two five-week periods were separated by at least a week. During the week of the operation a child almost invariably lost weight, and this week was allowed so that recovery from the effect of the operation might be made, and the child would be in the same position at the beginning of the second five weeks as he had been at the end of the first five.

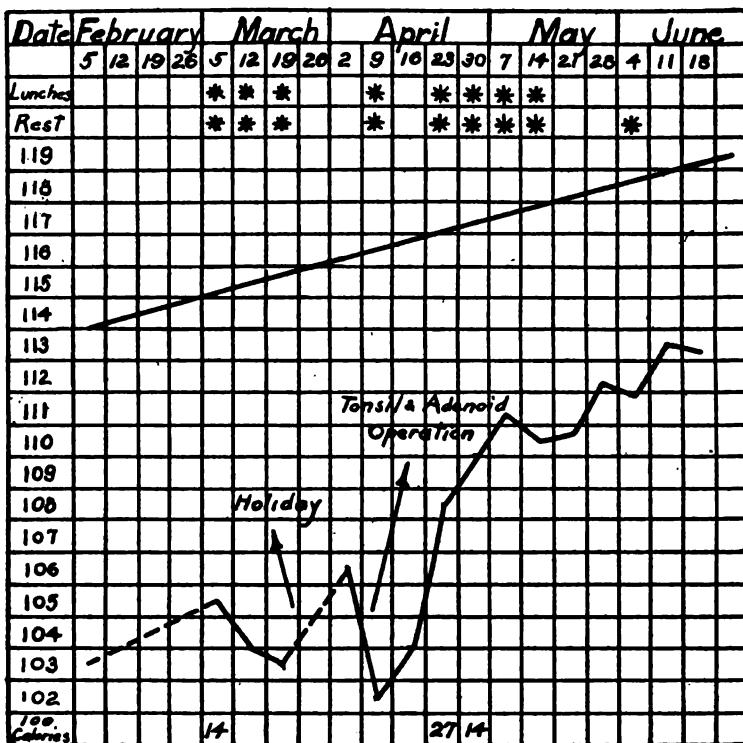
*Carious Teeth.* Our results do not show a very marked effect of carious teeth on the per cent of underweight. There were 17 of our 105 children for whom no record was obtained. Of the other 88 children, 25 had no carious teeth. The remaining 63 had from one to 12 carious teeth. The distribution of the children with the average percentage of underweight is shown in the following statement:

Number of carious teeth	No Record	0	1	2	3	4	5	6	7	8	9	10	11	12
No. of children.....	17	25	21	12	9	8	3	3	2	2	1	1	0	1
Average per cent under weight.....	10	10	9	8	13	9	10	10	16	10	13	9	0	13

These numbers are entirely too few to lead us to any clear-cut conclusion, but it is significant that the average per cent of underweight children without and with carious teeth remains approximately constant. The one child who had 12 carious teeth was only 13% underweight, whereas the six children with five or six carious teeth were on the average 10% underweight. These figures are suggestive, and, taken in combination with the figures for those who had no carious teeth and for those who had one, they are decidedly interesting. Twenty-five children had sound teeth. They averaged 10% underweight. Twenty-one children had one carious tooth, and averaged 9% underweight. When one considers that in the latter group were included four children of the "Open Air" class who were only 3, 4, 6 and 6% underweight, we find that the average per cent of underweight children who have one carious tooth is approximately the same as the average per cent of children who have no carious teeth. This is by no means an argument for indifference to the problem presented by the presence of carious teeth; but it does suggest that there may be very faulty conditions of the teeth without in any way interfering with the chewing surface or supplying sufficient toxins to the system to interfere with the process of digestion.

*Individual Children..* In the following charts we have presented the records for five different children for whose original underweight and for whose later progress various reasons might be given. In the first line of these charts there is indicated the date on which the nutrition classes met. The stars of the second and third lines indicate that the child

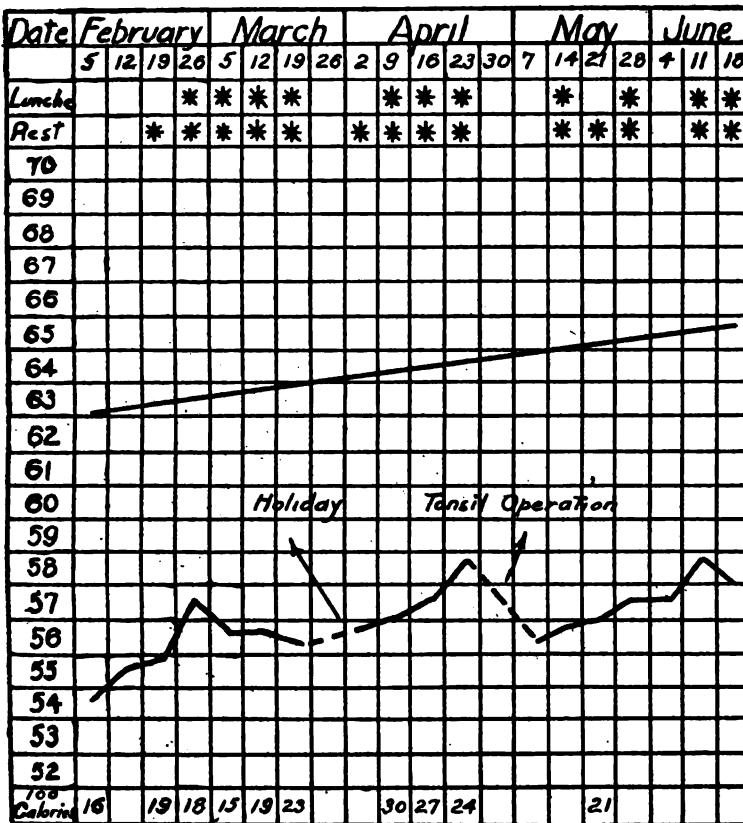
### CHART I



took daily mid-morning lunches and a mid-morning rest. In every case where the child had a record of seven mid-morning lunches for the week, he was given a red star. In the same way a blue star was given for the observance of the seven rest periods. The figures in the left-hand column give weights in pounds. The heavy straight line, in every case the upper line of the chart, indicates the average weight for children the same height as this child. The broken

lower line shows the weekly increase or decrease. The last line of figures is the average daily number of calories taken on the basis of the record of the food eaten in a two-day period.

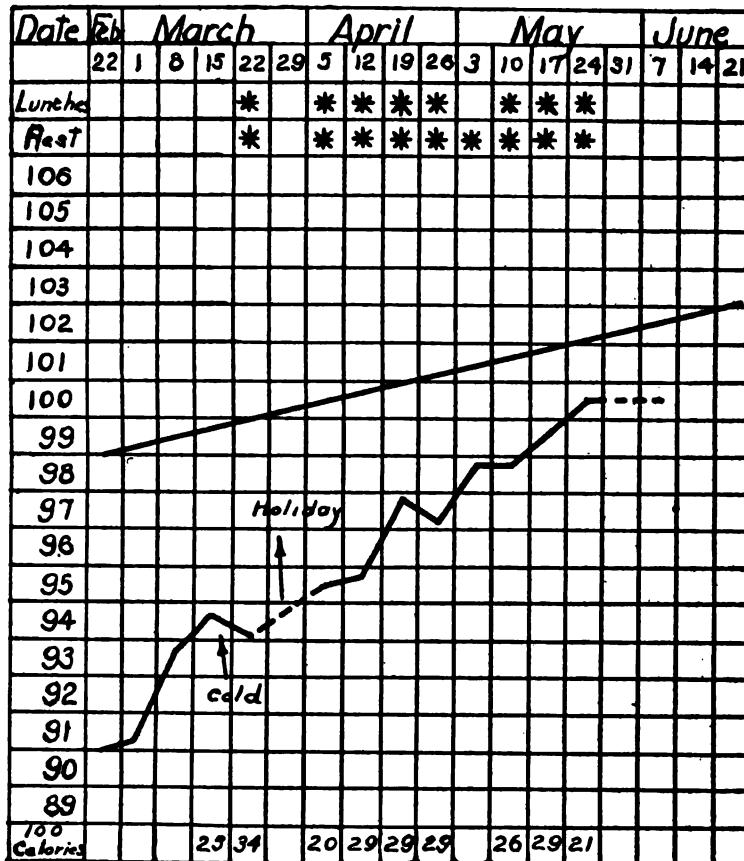
## CHART II



The first chart is for a boy of 15 years of age who was expected to weigh 111 pounds. He actually weighed about 104 pounds. Before entering the clinic, his meals had been very irregular and he had not taken time to eat. Along with that he did a great deal of work outside of school hours. He also had difficulty in breathing, enlarged tonsils and adenoids obstructing the air passages. The three records

which are given of his diet indicate that he did not eat enough for a boy of his age and size. During the first four weeks of the clinic he did not attend, and in the following

### CHART III

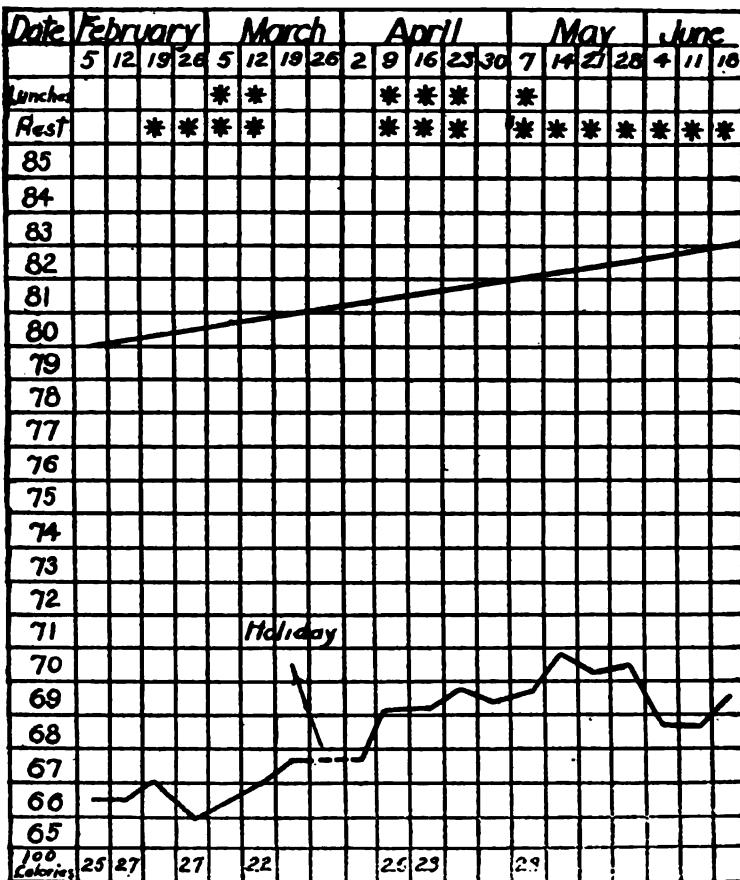


two weeks he lost in weight, as recorded. During holiday week he made a decided gain, but dropped back to his lowest point, following an operation for the removal of enlarged tonsils and adenoids. He also ceased working the long hours after school, and his gain was continuous until the first of

May, at which time he began working outside of school hours, and later ignoring the daily rest period and lunch.

Chart No. 2 gives a record of a problem case. This child

### CHART IV



is almost ten years old, and at the beginning of the clinic was 12 per cent underweight. She had not been taking a sufficient amount of food and had frequently come to school without any breakfast. She was an exceptionally intelligent child and rather than be late for her morning class, would

rush off from home completely ignoring breakfast. Despite the fact that she was fairly regular in taking the mid-morning lunch provided, the number of calories taken daily did not increase sufficiently to bring about an increase in weight. Fair progress had been made up to the end of April, at which time an operation for the removal of tonsils was performed and she lost more than two pounds. During the following week she kept no record of the amount of food taken, and her increase in weight is not much more rapid than the normal increase.

The various factors which we have so far considered as being operative in preventing or in bringing about an increase in weight do not seem to have played a part in this case. This suggests that there may be other factors of which we have not yet taken account. It seems to us that an explanation for failure to gain may be found in certain emotional disturbances. Some of our children have had periods of anxiety or worry and have shown a decrease in weight. In other cases where the child failed to gain there has been antagonism toward other members of the household. Our data give no definite basis for estimating how far emotional disturbances may influence the process of digestion. We are convinced, however, that in some cases of undernourishment the emotional disturbance is an important contributing factor. Cannon<sup>8</sup> has shown that fear and anger are attended by a prompt cessation of the churning movement of the stomach and the cessation of the flow of gastric juice. It seems highly probable that the emotional conditions in our children may also have similar concomitants. Further work in a nutrition class will not be complete until these factors have been studied.

Chart No. 3 shows a very satisfactory progress. This child was nine per cent underweight at the beginning, and the use of tea and coffee of which he had taken much, seemed to be an important factor in keeping him under-nourished. While he increased to a certain extent the number of calories taken, this increase could only partially account for the rapid rise in weight which brought him by the end of May within two per cent of normal. At this point he neglects his daily rest and lunches, and on his only other return to the class, has made practically no gain for a two-week period.

The record of another child who fails to make the desired progress is shown in Chart No. 4. This child was sufficiently interested to report the amount of food taken at various times, but he suffered from an obstruction in his breathing

<sup>8</sup> Cannon, W. B. "Bodily Changes in Pain, Hunger, Fear and Rage." New York. Appleton, 1915. pp. XIII+311.

through the presence of enlarged tonsils and adenoids. It seems evident in this case that rest and lunches are not sufficient to cause an increase in the weight when such factors as breathing obstructions are permitted to operate.

*Eliminations.* Of the 105 children enrolled, 15 were eliminated. Two of these graduated. That is, before the period of the nutrition classes elapsed, they had reached normal weight for their height. The other 13 children were excluded from the class for various reasons. Sometimes the difficulty was refusal on the part of the parents to have an essential operation for the removal of tonsils and adenoids performed. They could not see the necessity of having the child in good physical condition; and the handicap of obstructed breathing was too great to be overcome. In other cases the children were unruly and indifferent to the procedure. They disrupted the class and made it impossible for the other children to benefit by the instructions. The situation with those children indicates the difference between the conduct of a *nutrition class* and the conduct of a hospital clinic for malnutrition. In the latter there are found only those children whose parents have realized that something is wrong. The children have been brought to the clinic in order that advice may be given concerning the best method of treatment. The parents are not only ready but anxious for instruction which will enable them to take better care of the child. In the nutrition class, on the other hand, we gather together those whose parents may not have realized that these children were not as strong and healthy as others. They are not coming for instruction or advice and when some outsider suggests that different care is necessary, they may be, if not resentful, at least indifferent. Some means of gaining their interest and cooperation must be devised if the methods of the nutrition class are to be beneficial. In a few cases it was found impossible to interest the parent in the success of the child. Some children were not put into good physical condition. The reason was not alone the parents' indifference but also the impossibility of making satisfactory hospital arrangements for the children at the time of operation.

#### WHAT IS DONE IN ORGANIZING AND CONDUCTING A NUTRITION CLASS

*Weigh, and Measure the Height of the Children.* The initial step in organizing the nutrition class is the weighing and measuring of the children. The height being determined, the average weight for that height can be obtained by referring to the following table:

TABLE OF HEIGHT AND WEIGHT\*

BOYS			GIRLS		
Age	Height	Weight	Age	Height	Weight
2.....	32.....	27.....	2.....	32.....	26.....
.....	33.....	29.....	.....	33.....	28.....
.....	34.....	30.....	.....	34.....	29.....
3.....	35.....	32.....	3.....	35.....	31.....
.....	36.....	33.....	.....	36.....	32.....
.....	37.....	35.....	.....	37.....	34.....
4.....	38.....	36.....	4.....	38.....	35.....
.....	39.....	37.....	.....	39.....	37.....
.....	40.....	38.....	.....	40.....	38.....
.....	41.....	40.....	5.....	41.....	40.....
5.....	42.....	41.....	6.....	42.....	42.....
.....	43.....	43.....	.....	43.....	43.....
6.....	44.....	45.....	.....	44.....	45.....
.....	45.....	48.....	.....	45.....	46.....
7.....	46.....	50.....	7.....	46.....	48.....
.....	47.....	51.....	.....	47.....	50.....
.....	48.....	53.....	8.....	48.....	52.....
8.....	49.....	54.....	.....	49.....	54.....
9.....	50.....	60.....	9.....	50.....	57.....
.....	51.....	62.....	.....	51.....	60.....
10.....	52.....	65.....	10.....	52.....	63.....
.....	53.....	68.....	.....	53.....	67.....
11.....	54.....	71.....	11.....	54.....	70.....
12.....	55.....	77.....	.....	55.....	74.....
.....	56.....	80.....	12.....	56.....	79.....
.....	57.....	82.....	.....	57.....	84.....
13.....	58.....	85.....	13.....	58.....	89.....
.....	59.....	90.....	.....	59.....	93.....
14.....	60.....	95.....	14.....	60.....	98.....
.....	61.....	99.....	.....	61.....	102.....
15.....	62.....	103.....	15.....	62.....	107.....
.....	63.....	107.....	16.....	63.....	112.....
16.....	64.....	114.....	.....	.....	.....
.....	65.....	121.....	.....	.....	.....

This table is constructed on the basis of the data furnished by Holt, Burk, and Boas. The first and fourth columns give ages. In the second and the fifth columns the heights of children are given by steps of one inch. The third and sixth columns give the corresponding weight for those particular heights. These figures are for the nearest pound or inch for the various ages. The number of inches between successive years is then taken and a proportional increase in

\* The measurements for children below the age of 5 are taken from the data furnished by Holt, and the measurements are for children exactly 2, 3, and 4 years of age. From 5 years on the measurements for each year are for all the children between two successive years. For example: the measurements for those called 5 years old are for all children in the sixth year of life. This means that the average age of the group is five and one-half years. In the same way the measurements are given for 6-year-old children, 7-year-old children, etc.

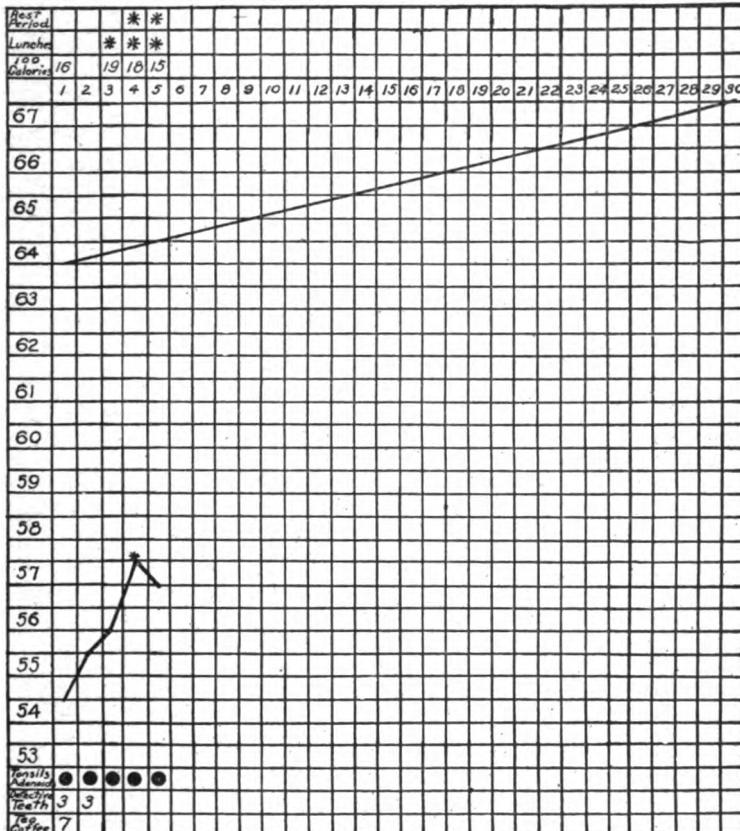
pounds is calculated. Between the years 15 and 16 a boy increases two inches in height. In the same time he increases in weight 14 pounds. For each inch increase in

CHART V

Age: 9 Grade 5<sup>th</sup>  
Height: 52  
Weight: 54.5

Name: M-----M

Normal Weight: 64  
Underweight: 9.3  
Percent Underweight: 15



Bureau of Educational Experiments  
18 West Eighth Street  
New York City

Red Star means Daily Lunch  
Blue Star means Daily Rest  
Gold Star means Greatest Gain in Week

height he is considered, therefore, to increase seven pounds in weight. Suppose a boy measures 42 inches in height. If he were the average weight, he would be 41 pounds. Or, if one were 52 inches high he should weigh 65 pounds. Let us suppose that this boy weighs only 58 pounds. He is seven

pounds underweight. That is, he weighs more than 10 per cent less than the average child of his height. The height and weight of every child with the percentage over or under weight are determined in the same way. All children who are 7% or more underweight may be considered candidates for a nutrition class.

*Instruct Them in Health Habits.* The nutrition class works on the assumption that every child wants to be like other children. "All girls want to be attractive and beautiful. They also want to do as other girls do—dance, swim, and play tennis. Every boy wants to be athletic. The desire to play base ball and foot ball can always be aroused in him sufficiently to cause him to do almost anything to gain a good physical condition for that purpose."<sup>4</sup>

To bring about the necessary competition, various methods are used. One of the most important of these is the use of a chart. The one which has been designed for the purpose is shown in Chart V. The name of the child is printed in large letters, and then his age, grade, original height and weight are recorded. Along with this are given his normal weight, the number of pounds and the per cent underweight. The chart is arranged to contain the results for thirty meetings of the nutrition class. These meetings are indicated in the fourth line of the chart by the numbers from 1 to 30. In the column corresponding to each of these numbers the weight which the child has reached is recorded. The weights are given in the left-hand column, the lowest number in the column being one or two pounds less than the weight of the child at the initial meeting of the class. The normal weight line is shown by the heavy straight line running diagonally upward across the chart. The record of the weekly weighing is shown by the lower line.

Those factors which have been found to be most important in dealing with the problem of under-nourishment may be divided into two classes: positive or helpful and negative or detrimental. The positive or helpful group includes the observance of a daily rest period and the taking of a daily lunch. These two things are necessary because the child, being ill, lacks the vitality or energy to carry him through the ordinary day. He is unable through the night to store up sufficient energy. He is also unable with the ordinary three meals to assimilate enough to bring him up to normal weight. More frequent rest periods and more frequent meals are necessary. Eating more food at the three designated periods

<sup>4</sup> Emerson, W. R. P. *Measured Feeding for Older Children*. *Bost. Med. & Surg. Jour.*, 1914. Vol. 170, pp. 80-83.

is not so beneficial as a smaller quantity taken more frequently. The third positive factor is the actual number of calories taken. It has been found that many of these children are not taking sufficient food. To determine whether or not the amount is sufficient a record should be kept of all the food taken on two successive days and the average daily amount determined. The child records in a "Diet Book" the number of slices of bread, the ounces of milk, the table-spoonsful of cereals, the amount of meats and of all other things consumed in all the meals of two days. For most of these children, the amount should not be less than 2,000 calories; and children have been found who, without any disturbance to the digestion, could take as many as 3,500 calories per day.

In order to check up on these three positive factors, the first three lines of the chart are used. The actual number of calories is recorded. If a child takes the mid-morning lunch and observes the mid-morning rest period, a red and blue star, respectively, are inserted in the corresponding column for the week. If he fails to do either of these things daily, he is credited with the actual number of days of the week in which he fulfilled the requirements.

The negative or detrimental factors in the problem of malnutrition are the presence of enlarged tonsils and adenoids, the presence of defective teeth, and the use of stimulants, usually tea and coffee. The last three lines of the chart are devoted to a record concerning these factors. If the child has no need of an operation for adenoids or enlarged tonsils, this line remains clear. If an operation is necessary, a black seal is placed in the column which includes the results found in the first meeting of the nutrition class. For each successive week this is repeated until the breathing obstruction has been removed and the line from that point on remains clear. The number of defective teeth is recorded. If in the beginning all the teeth are sound, the line remains white. As the dental work is done and the defective teeth removed or cared for, the number becomes smaller until all the teeth are sound, and from that point on the line is a clear record. In the same way with the use of tea or coffee, the number of days when the child indulges is recorded. The largest possible number is seven; and as soon as he eliminates tea and coffee from the diet, the line becomes white and is only again marred when the child indulges in the prohibited stimulants. The two classes of factors are differentiated in the following way. For the positive or helpful the aim is to get a star or a large number for every week. For the negative or

detrimental factors the aim is to eliminate the black marks and have a clear record all across the chart.

As the children enter the room for the nutrition class, they find arranged against the wall the charts for all the children. At one end of the line we place the chart of the child who has made the greatest gain since the previous meeting. The chart of the child who has gained the least or lost the most during the week is placed at the other end of the line. To the first chart a gold star is attached which will stand for the child always as an emblem of accomplishment in that particular week; and he will be stimulated to make ever greater efforts to have as many gold stars on his chart as he possibly can. In this way he has not only the general competition of reaching the normal weight line first, but he has the specific task of making the greatest gain every week he is in the class.

As the children take their places, they arrange themselves according to the order of the charts. At the one end are those who have made the greatest gain; at the other end are those who have made the least. The instructor then takes up the various factors which may have been instrumental in causing the gain, in preventing a larger gain, or in causing an actual loss. Of these factors there is a considerable number. Some of them we have already discussed in the two groups of helpful and detrimental factors. Certain other conditions are important, and they are also considered in the discussion. If a child uses water as a flush with his meals and washes the food down without proper mastication, he may be taking a great many calories but with the food in such condition that he derives no benefit from it. The children are encouraged to eliminate water from the meals unless it be at a time when there is no food in the mouth. The number of hours of sleep and whether the child sleeps where he can get plenty of fresh air, and whether he is taking so much exercise in play or work that he becomes excessively fatigued, are all factors which the instructor considers in his teaching of the children.

The question of what to eat is sometimes stressed. No attempt is made to change the diet of the family. What is eaten is first ascertained by studying the records which the children submit of their actual food. In those cases where the proportion or amount is not satisfactory, certain changes may be suggested. Such recommendations must be made on the basis of the individual's preferences and habits. Many children do not take sufficient cereal or milk and they lose the advantage of the high caloric value of these two foods.

It frequently happens that the reason for not taking them is a dislike for them. A liking for them may be developed. It cannot be imposed arbitrarily. As Bayliss<sup>5</sup> says "The change of any habit is apt to cause at first a feeling of want. This want is purely mental or psychological." The demands of the body may be met in large part by cereals and milk, but any change in diet may be disagreeable to the child, and such a possibility must be considered by any one attempting to feed school children. As the author above named says "It has been noted that Irish peasants used to the consumption of voluminous rations of potatoes have complained of hunger and even of starvation when given food of greater value but of smaller bulk. Similarly, Bavarian peasants, used to bread, complain if given a diet of meat." The likes and dislikes of children in regard to food may seem to an adult merely whim or fancy. As such they are nevertheless real and must be considered when we attempt to meet the problem of under-nourishment by supplying quantities of food. Not only the racial characteristics, but the group preferences must all be considered when planning a diet. The food which has high caloric value, may, because of its strangeness, be entirely unsatisfactory; and the children who are supposed to eat it must be educated gradually.

From this discussion of the conduct of the nutrition class it may readily be seen that the problem must be met not alone by school feeding, but also by an educational procedure. If it were possible to bring a child up to normal weight by a simple process of feeding, there would still be an important element of the nutrition class completely ignored. The educational side of the question would not be touched. This is an important phase. It is not sufficient to bring a child up to normal weight and leave him without habits which would continue him in that condition. Rather it is essential that during the process of return to normal weight he should have acquired something which would carry over and have an important influence on his future life. He must be educated in matters of personal health and hygiene, in the reasons for eliminating certain things such as the use of coffee, and the reasons for the observance of certain other things such as the amount of food, periods of sleep and rest, slow eating, etc. If, at the end of the nutrition class, a child has failed in getting these fundamental elements, even though he has been brought up to normal weight, the function of the nutrition class has not been served. Knowing why it is necessary to

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<sup>5</sup> Bayliss, W. M. *The Physiology of Food and Economy in Diet*. Longmans, Green & Co., 1917. p. 94.

do certain things and having formed a habit of doing them, the child is in a much better position to face further difficulties than though he had been just passed on well equipped for the moment, but with no background of experience to maintain that position.

### CONCLUSIONS

I. Every child should be weighed and measured and those who are as much as seven per cent underweight for their height should be selected for nutrition classes.

II. Provision of food is not in itself adequate to solve the problem of malnutrition.

III. Habits such as rapid eating, using water as a flush, eating when excessively fatigued or irregularly, should be corrected.

IV. Stimulants such as tea and coffee must be eliminated.

V. Physical defects, such as naso-pharangeal obstructions, must be removed.

VI. The amount of food should be carefully measured. A record of two consecutive days' consumption is a fairly reliable index for a week.

VII. Rest and food should be given at not too long intervals. A mid-morning lunch and rest are needed by those children who are unable to store up a reserve of energy.

VIII. The Nutrition Class offers an opportunity for teaching many children hygiene and health habits. The competitive spirit is aroused. The chart shows actual gains or losses, and the children see the connection between these changes and the things that are spoken of as causes.

## LANGUAGE DEVELOPMENT DURING THE FOURTH YEAR

### THE CONVERSATION

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By G. C. and JULIA BRANDENBURG, Purdue University

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In an article in the Pedagogical Seminary of March 1915 an account was given of the language development of our daughter G during the fourth year. The data presented in that article were largely of the vocabulary growth. In the present article we shall attempt to describe some other phases of G's linguistic growth during the fourth year.

During the time the study was being made we lived in Madison, Wisconsin, where the father was engaged in graduate work and teaching in the University. There was naturally a good deal of studying, reading, writing, and discussion of educational matters in the home at that time as there has always been. It is hardly conceivable that this should not be reflected in the child's language as G has always shown a keen interest in all the activities of the home and is never satisfied in being a mere spectator. She insists on taking part in everything and manifests considerable annoyance when there is discussion in her presence which she cannot, at least, partially understand.

When G was 40 months of age a record was made of her conversation for an entire day and this was repeated just 12 months later when she was 52 months old. | It was naturally more difficult to record verbatim all she said during the day in the latter case. We used an improvised system of shorthand and took turns writing, each working about an hour at a time. Even then, it was found impossible to get everything down precisely as it was uttered. As an aid in the interpretation of mental growth such records are obviously of considerable value for if the vocabulary record represents the "linguistic tool chest" of the child, the conversation record indicates the facility with which the "tools" are used.

The following table presents an analysis of the day's speech hour by hour:

## 28 LANGUAGE DEVELOPMENT DURING THE FOURTH YEAR

TABLE I

Hours.....	7:00	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	Total
Words spoken...	1495	925	1256	968	1496	1366	1224	662	1511	1196	1241	1183	406	14,930
Singing and Babbling.	282	365	73	140	50	70	0	10	30	15	10	130	130	1,305
Questions..	40	18	32	28	27	31	37	13	34	32	71	31	3	397
Meaningless questions.	0	0	0	1	0	0	2	0	0	0	2	0	0	5
Sentences..	209	104	163	123	184	163	158	87	184	180	177	175	60	1,967
Average words per sentence..	7.1	8.9	7.7	7.8	8.1	8.3	7.7	7.6	8.2	6.6	7.0	6.7	6.7	7.5
Minutes silent.....	0	0	12	7*	0	0	0	20	0	0	0	0	0	39
Use of I, me, my & mine 152	72	59	50	97	86	81	30	62	70	88	73	38	958	
Use of you & yours..	73	24	47	36	42	51	26	21	43	37	52	40	3	495
Use of we, our & us	3	11	14	1	1	0	27	2	5	2	8	5	2	81
Use of Mamma..	75	29	53	47	33	48	64	14	24	42	52	19	8	327
Use of Papa	38	18	23	15	13	21	27	25	44	29	40	33	1	508

\*Humming during these seven minutes.

*Total Words.*—The total number of words uttered is not quite so large as it would have been if G had not spent 20 minutes of the two o'clock period in the library looking at picture books; during this time none of her speech could well be recorded. There were two other periods spent out of doors walking when it was impossible to record all that was said. These two amounted to 40 minutes. She uttered during the day, according to the record, 14,930 words, an average of 1244 words per hour. At 40 months of age, one year before this, she spoke 11,623 words in the day, an average of 950 per hour. Children evidently differ greatly in the quality and quantity of linguistic expression during the day. We have always considered G rather talkative. Mrs. Nice's daughter E, at 63 months used only 10,500 words in a day, but one of Bell's children used 15,230 words at three and one half years of age while another of four years found use for 14,996. None of the children reported by Gale used so large a number, being younger children. It is quite obvious from these records that G is not abnormal in the number of words used in a day.

*Singing and Babbling.*—It is interesting to note how large a part music plays in the daily life of a child. While it was not possible in every case to record the syllables and words just as they were uttered, it was not difficult to get the number of these and so it is believed that this is approximately correct. It will be noted that singing is recorded in the one o'clock period. The detailed record shows that the child hummed several times during the hour but used no words. Thus there was not an hour in the day in which some musical expression

did not occur. The most musical periods seem to be early in the day, in this case during the first two waking hours. In considering this phase of G's expression, it must be remembered that she has never been able to carry a tune and apparently only distinguishes between different airs by the words. Frequently the singing is a matter of chanting some ordinary phrase in a rhythmical manner as: "See my dollie, see my dollie." Very frequently such chanting is accompanied by rhythmical motions of some part, or of all of the body. There is still a small amount of pure rhythmical babbling such as: "Rub dub de da," "Zuz zuz ze ze," etc. This is always in rhythm, and frequently has some semblance to a tune. It thus appears that G is still in the rhythm, or lowest, stage of musical development, a stage which many children of her age have passed, but one beyond which a small percentage of children never go.

*Questions.*—The total number of questions asked during the day was 397, an average of 33 per hour. A year before, she asked 376 in the course of the day, so there has been little change so far as the quantity of interrogation is concerned. There are, however, slight changes in the nature of the questions which are probably significant. There are not more than five of the 397 questions which appear to have been asked merely to be getting attention or to be talking and in these cases it is not certain that they were not bona fide. As far as possible we have always answered G's questions when they were genuine, as they usually were. The following are typical questions from G's speech at 52 months of age:

(On the street passing Mr. Schumacher's house which was being remodeled.)

- G. Papa, where's Mr. Schumacher?
- F. At his store I suppose.
- G. Well, I thought he was going to tear his house down?
- F. He was, but he has to stay at the store.
- G. O, so he hired some other men to take his house down, did he?
- F. Yes.
- G. Does he stay at the store all the time?
- (To her father writing.)
- G. Are you tired, Papa?
- F. Yes.
- G. It's too bad isn't it, Mamma? I wish I had a little brother or sister to do all that work. Now, do you see? Say, Papa, why don't you let me do that work and then you wouldn't get so tired?

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Questions at 40 months of age:

G. Papa, do you want my buggy fixed so it won't make so much noise? This way, Papa? Mamma where are you going?

At this age the child's mind seldom remained on one subject long enough to ask more than two or three questions about it and then it would jump to some other subject perhaps entirely foreign to the first. More often only one or two questions were asked at the same time on the same topic as is illustrated by the following from her speech at 42 months:

G. (To her aunt) Aunt Laura, did you change your mind?  
A. No.  
G. Did you go out to your farm?  
A. Yes.  
G. I can turn the water on. I'm going to wash my hands.  
Dinner (At the table).  
G. How do we make high chairs, Mamma? Aunt Laura, where's my—— Here's my fork. Give me my knife and spoon and fork and knife. Am I dressed? Will you put that down, Papa? Dinner is served, Mamma.

Considering the great number of questions asked by a normal child of four or five years of age, it is really no wonder that parents often acquire the habit of answering most questions with, "I don't know" or, "Keep still, don't bother me," etc. And still, when we see what a small percentage of the child's questions are without a quite definite purpose to the child, it is apparent that we must adopt a more intelligent method of dealing with the questions; otherwise the mental development of the child is bound to suffer. True, the child must not be encouraged in asking all sorts of silly questions or in repeating questions over and over again thus developing a sort of artificiality or affectedness in his expression. It is just as important that this practice as well as the other extreme be avoided for the welfare of his mental life. Only by careful and constant observation in each case is it possible for the parent to adopt and pursue a sane course.

*Sentences.*—As nearly as can be determined there were spoken during the day, 1873, one year previous. A considerably larger number of words and sentences were spoken in the first hour of the day than in any other. The child seems to awaken in the morning full of energy and enthusiasm which manifests itself in an outburst of linguistic expression. The average number of words per sentence for the entire day is approximately 7.5, as against an average of 6.6 the preceding year. The number of words per sentence seems to

be small in the first period of the day and during the last four periods. The separation of the child's conversation into sentences is in many cases an arbitrary matter since several sentences are frequently run together without much attention to inflection in the child's haste and enthusiasm in telling something. The following paragraph illustrates G's sentence structure where it is at about its best on this day:

"Mamma, I'm goin' to have you wash this when it gets dirty. Yes, the lace'll get dirty, but I'll have you take the lace off when you wash it. See, just like this? Well, Mamma, where shall I put my other pillow 'cause it takes all the room here? Mamma, I tell you. We'll put this here 'cause it's clean. Uhuh. I know where I'll put it now. I'll have them lay down here and then when I want them to sit up I'll have them sit up here."

The following illustrates the sentence structure at the same period of the day one year before:

"Are you going to let the hen out? Take hold my hand. I am starved to death. I want an orange. I am hungry. I don't like bread without butter. We don't have bread after we've had orange, Mamma. I can find a big piece when it's good."

The sentence structure has become, during the year, somewhat more complex, a little smoother, and slightly more coherent; and it is perfectly evident, if our observations can be relied upon to any degree, that G's mental operations have been modified in precisely the same ways.

*Amount of Silence.*—At no time during the entire day except when she was in the library, was G silent for a period to exceed four minutes, and the total amount of time that she was linguistically inactive outside the time spent in the library was only 19 minutes. No record was made, however, of silence where the periods were less than one-half minute in length. It is, indeed, hard to believe that a child can maintain such an incessant linguistic bombardment for so long a time, and yet it takes little observation of children of G's age to convince one that this is characteristic of a normal child. Naturally, a child would ordinarily be compelled to be quiet more of the time than was G on this particular day since others in the family would consume a considerable portion of the time in conversation. In this respect the day could not be considered entirely normal. In view of this tendency to constant expression on the part of the growing child, it is easy to appreciate some of the hardships which fall to the lot of the child when he is put into the typical public school where he is attached to an uncomfortable seat and compelled to sit quiet and silent

## 32 LANGUAGE DEVELOPMENT DURING THE FOURTH YEAR

for from one to three hours at a time. Is it any wonder that children whisper, talk aloud or write notes in spite of iron-clad rules? Is it any wonder that the innocent, happy, cheerful and open countenanced child starting to school in September comes back in June, shy, indifferent, secretive and lifeless?

*Personal Pronouns.*—If one should assume as some psychologists have that the use of the personal pronoun is indicative of the development of the *self* concept, then the use of this pronoun in its various forms becomes an interesting topic. Every other sentence, that is, one half of all the sentences the child used during the day, contain the first personal pronoun in some form. The total number of uses of this term for the day was 958, while the corresponding number for one year before was 860. The ratio of first personal pronouns to other words was therefore, at forty months one to every 13.5 and at 52 months one to every 15.6. One might conclude from this that, while the egoistic tendency is still strong in G, the number of uses of this term being regarded as an index, it is apparently losing some of its relative importance. This conclusion is slightly supported, by the facts concerning the uses of the personal pronouns in the second and third persons for we expect a decrease in the egoistic to be paralleled by an increase in the altruistic tendency indicated by a growth in the "you" and "we" elements. The second personal pronoun was used approximately 500 times during the course of the day at 52 months of age, or once for every 29.8 words of conversation. At 40 months of age this term is found 375 times in the day's conversation or once for every 31.6 words. Here, then, we find a small increase in the relative amounts of the "you" and "we" elements in the child's speech.

The writer does not feel at all certain as to the significance of these observations. It would be necessary to have considerable more data of a similar nature before attempting much generalization. The child gets its mode and form of expression almost wholly through imitation of the expression of his associates. As the expression develops in complexity, more and more does it tend to become an exact reproduction of their pronunciation, vocabulary, form and style. There is little in the behavior of the child, aside from the language, at this stage to indicate that the developing use of the personal pronouns is of great significance so far as the growth of egoistic and altruistic tendencies are concerned.

*The Terms "Papa" and "Mamma".*—The number of uses of these words is a rather difficult matter to determine. It

was thought that by careful study of the uses of the two terms some idea might be gained, first, of the relative importance from the child's viewpoint of the two parents, and second, of the mere amount of attention which the child demands from the parents. Naturally this would vary greatly with different types of children and with different kinds of homes. The first difficulty encountered in our study was the fact that the child does not always use the word *Papa* or *Mamma* when addressing the parent and the second was that she does not always use these words to call for any sort of attention at all. In attempting to make out the relative amount of reference to each of the parents, one is compelled to use his personal judgment in a great many cases. The figures given in the table are therefore, partially an approximation. The words *Papa* and *Mamma* are most frequently used in asking questions and in these cases practically always require a response. Even where the words are not used in sentences or put in the form of questions, a response of some kind is usually expected from the parent. The fact that G calls upon the mother or used the term *Mamma* about forty times an hour during the entire day and on the father only about twenty-seven times per hour suggests that the mother enters much more largely into the mental life of the child at this stage of development than does the father. There are many and obvious reasons, which need not be discussed here, why this should be true. It is altogether probable that were there other children in the family, the child's attention would not be directed to the parents so continuously. In any event this data indicates the almost incomprehensible demands which the child makes upon the parent's attention. It also indicates how intimate is the relation between the parents' mental characteristics and the child's mental development and to what extent the child's mental development and mental status are linked with and molded by its parental environment.

#### THE ONE-DAY VOCABULARY

In making up the vocabulary of words used during the day, verb inflections have been listed as separate words, but the names of 43 persons and six places have been omitted. There were 51 of the verb inflections. If these are subtracted, the vocabulary as indicated in the table would be decreased to 901. Including the proper nouns and the verb variants, the total number of different words used is seen to be 999.

At 40 months of age G used 859 different words in the course of a day's conversation. She had at that time a vocabulary of approximately 2500 words; so that she made use of

## 34 LANGUAGE DEVELOPMENT DURING THE FOURTH YEAR

34% of her available fund of words during the day. At 50 months of age, with a vocabulary of about 4200 words, she used about 1000 different words, or about 24% of her word fund. Thus it is seen that as the size of the total vocabulary increases, the size of the one-day vocabulary increases, but the ratio of the latter to the former decreases. This is what one naturally would expect.

The following table shows the ratio of the different parts of speech in the one-day vocabulary.

	NUMBER	PER CENT
Nouns.....	402	42.3
Verbs.....	292	30.7
Adjectives.....	113	11.9
Adverbs.....	72	7.6
Pronouns.....	31	3.3
Prepositions.....	20	2.1
Interjections.....	11	1.1
Conjunctions.....	9	1.0
 Total.....	 950	 100.0

### THE ONE-DAY VOCABULARY

I. NOUNS	book	clock
All	bottle	cloth
all right	boy	coalbucket
amen	bread	coat
animals	breakfast	cocoa
anything	breast	coffee
arm	brother	cold
apples	bulldog	corn
automobile	bunches	cottontail
	butcherknife	couch
baa	bushel	cover
baby	butter	cow
back		cream
band	cage	cream-pie
barber	cake	croup
barn	candy	crowd
basement	capitol	cucumber
basket	care	cup
bath	case	cupful
beans	cattlesnake	cushions
bears	cellar	
bed	chain	dandelion
beater	chair	day
beef	chatterbox	dear
belts	cheek	"dee dil dee"
bit	chickens	dinner
bites	children	dishes
birdie	chimney	dishpan
blanket	Chinaman	doctors
bloomers	chocolate	dog
boards	church	dollie
boat	cinnamon	door
body	city	drawer

THE ONE-DAY VOCABULARY—*Continued*

dream	grinder	meal
dress	grounds	men
drink	guns	midnight
dust		milk
ears	hair	mince-pie
edges	halfpast	minute
egg	hall	mistake
eight	hands	monkeys
ends	hat	morning
engine	head	months
enough	"heehee"	mother
everybody	hello	mountains
everything	hide and seek	mouth
exercise	home	muss
eye	hook	
eyelid	horse	name
face	house	nap
fairy	hundred	needle
faucet	husband	night
feather	ice	night-cap
feet	icebox	nightgown
fellow	icewater	no
fibs		nobody
fight	jackolantern	noise
finger	jelly	none
fire	jellyroll	nose
five	juice	no sir
flag		notebook
floor	Kentucky	notes
flour	kind	oar
flowers	kitty	one
fly	knives	"oop see daisy"
folks		oranges
foot	lace	order
fork	lady	oven
four	lake	owls
Friday	lamb	
friends	lamp	page
frogs	leg	pair
front	lemon	pan
fun	lemon-pie	pancakes
gentleman	letter	pantry
German	library	Papa
Germany	lid	paper
girl	light	papers (newspapers)
glass	line	part
God	lion	peanut-butter
godmother	lots	pen
Goldilocks	lunch	pencil
goodness	mail	people
good night	mailman	picnics
Grandma	Mamma	picture
Grandpa	man	pie
grapefruit	market	piece
grapes	match	piggies
		pillows

## 36 LANGUAGE DEVELOPMENT DURING THE FOURTH YEAR

### THE ONE-DAY VOCABULARY—*Continued*

pillowslip	skin	tree
pin	skirt	tulips
pinchbug	sleeves	turns
pin-cushion	soap	two
pipe	soldiers	typewriter
place	some	
plan	something	"uh huh"
plate	songs	umbrella
playland	sorts	university
playthings	south	"uppy."
pneumonia	spankings	
pocketbook	spinach	
porch	spoon	view
powder	spoonful	visit
priest	squirrel	voice
pudding	stairway	
pumpkin-pie	statue	waist
quilt	stick	washboard
rabbits	stockings	washdish
rats	stomach	watch
rascal	stool	water
reason	store	wave
Red Hiding Hood	story	way
refrigerator	stove	"wee wee"
review	stream	west
road	street	wheat
rockingchair	street-car	wheel
room	stripes	while
room (space)	stuff	wieners (weenees)
roses	sugar	wind
rye	soot	window
sandwiches	summer	wolf
Santa Claus	sun	woodchuck
satchel	Sunday	word
Saturday	supper	work
school	sweetheart	
scissors	table	yard
screens	tailor	year
secret	taste	yes
see saw	tea	yes sir
seven	teeth	
shame	things	
shaver	thread	am
shears	three	are
sheep	thumb	aren't
sheet	time	asking
shoes	tin	asks
shop	Tipperary	
show	toadstools	bake
sidewalk	toiletsoap	baked
sink	tomatoes	barbared
sister	top	be
six	towel	beat
sixty	town	been
	train	began

### II. VERBS

## THE ONE-DAY VOCABULARY—Continued

begin	dreamed	ironing
beginning	dreamt	is
believe	dress	isn't
belongs	dressed	jumped
bent	drink	
bet	drop	keep
bite	dropped	kill
blow (trans.)	drunk	kiss
blow (intrans.)	dry	knock
boarding	eat	knocked
borrow	eaten	know
bother	eating	
break	enjoy	laugh
bring		lay
broke		laying
broken	fade	leak
burn	fall	leaked
buttoned	fastened	learn
buy	feels	leave
	fix	left
call	fixed	let
came	fold	lift
can	folded	like
can't	forgot	pit
care	found	lived
catch		lives
caught	gave	locked
"chair"	get	looked
"chaired"	getting	looking
changed	give	lost
chase	given	
chopping	go	make
clean	going	making
cleaned	gone	matter
closed	got	may
come	grating	meant
coming	guess	meet
cooked		mend
coughs	had	met
could	hang	mind
couldn't	hanging	move
crawl	happens	
crawled	has	named
cried	have	need
crying	hear	needed
curl	heard	
cut	helps	open
	hired	ought
darning	hit	
did	hold	peeling
didn't	"holler"	pick
die	hurry	planning
do	hurrying	play (music)
does	hurt	play
done	hush	played
don't		playing
draw	ironed	please

## 38 LANGUAGE DEVELOPMENT DURING THE FOURTH YEAR

### THE ONE-DAY VOCABULARY—*Continued*

pour	stop	wipe
pray	stuck	wiped
pressing	suck	wiping
pull	sucking	wish
pulled	suppose	wonder
pulling	surprise	won't
put		work
putting	take	worked
	taking	would
quit	talking	wrap
	tastes	writes
rains	teach	writing
raining	tear	written
read	tell	wrote
reading	thank	
remember	think	
rest	thought	A
ride	threw	all
ring	throw	another
roaring	tied	any
rub	told	asleep
run	took	awful
	tore	
said	touching	bad
sang	try	beautiful
saw	trying	best
say	turn	better
scared	turned	big
scrambled		bitter
see	unbutton	black
seen	unbuttoned	blue
send	"unchange"	broken
set	understood	busy
shall	unhooked	
shopping	used	clean
should		clear
show	wait	cloudy
shut	waited	cold
sings	wake	cross
singing	walk	cute
sit	walked	
sitting	walking	dark
sleep	want	dirty
slips	wanted	double
smells	wanting	dusty
sounds	was	
spank	wash	each
spill	washed	easier
spit	wasn't	either
spoiled	watch	every
sprinkle	waving	
stand	wear	faster
standing	went	fat
started	were	fine
stay	whistle	first
stayed	whistling	fresh
step	will	fried

### III. ADJECTIVES

A
all
another
any
asleep
awful
bad
beautiful
best
better
big
bitter
black
blue
broken
busy
clean
clear
cloudy
cold
cross
cute
dark
dirty
double
dusty
each
easier
either
every
faster
fat
fine
first
fresh
fried

## THE ONE-DAY VOCABULARY—Continued

full	squeaky	even
funny	still	ever
glad	straight	
good	such	far
great	sure	fast
happy	sweet	half
hard	sweetest	hardly
heavy	tall	here
higher	that	how
hot	the	
hungry	these	inside
kind	third	instead
last	thirsty	
little	this	just
long	those	
longest	tired	like
loud	true	
lower	two	maybe
many	welcome	mostly
mean	well	near
more	wet	never
much	which	not
mussey	white	now
new	whole	
next	wilted	off
nice	worn	on
old	worse	once
older	wrinkled	only
open	wrong	out
other		over
own		
pink	IV. ADVERBS	partly
"play"	Again	past
powdered	ago	pretty
pretty	ahead	
real	all	quicker
red	along	quite
right	already	
rough	anyway	rather
round	around	ready
sad	as	really
same	away	
second	back	so
shortest	bedtime	sometime
sick	before	somewhere
sleepy	below	soon
sorry	besides	
sour	down	than
	downstairs	then
	early	there
	else	through
		throughout
		today
		tomorrow
		tonight
		too

## 40 LANGUAGE DEVELOPMENT DURING THE FOURTH YEAR

### THE ONE-DAY VOCABULARY—*Continued*

up	their them these they this we what who	after around at between by down except for from in into
very		
when		
where		
whether		
why		
yesterday		
yet	you you'll your yourself	
<b>V. PRONOUNS</b>		
Both		
he		
her	Achew	of
him	ah	off
his	glory	on
I	my	over
I'll		
I'm	oh	
it	oh oh oh	under
itself	ouch	
I've		with
me	whee	
mine	whew	
my	whoo whoo	
myself	zuz	
our		
ourselves		
she		
that	About across	
<b>VI. INTERJECTIONS</b>		
<b>VII. PREPOSITIONS</b>		
<b>VIII. CONJUNCTIONS</b>		

## SUCCESS-MAKING TRAITS IN COLLEGE TEACHERS

By CLARENCE C. CHURCH

It needs but slight powers of observation coupled with some little experience in various college lecture and class rooms to teach how great a variety there is in successful college teachers. In physique inspiring teachers vary from insignificant and even puny men to herculean-like males. In bodily conformation a few are excellent, a few are ugly, the rest somewhere intermediate. A professor is sometimes described as handsome, perhaps more commonly he is described as somewhat queer. Most teachers, in college at least, possess so-called mannerisms, noticeable peculiarities of posture, gesture, speech, or ways of talking. *Once in a while* one sees a superb lecturer of classic type, who unperturbed runs smoothly along with his periodic sentences and artistic rhetoric, getting to the logical end of his subject just at the end of the hour. The degree and sort of discipline maintained by those who are successful in putting over their subject-matter and habits of thought is different with almost every instructor. Moral, intellectual, and social habits present no uniformity in the different individuals of a college or university community. Finally it must be admitted by observing pedagogues that every man has his own method, or way in which he tries to run the learning processes of his pupils.

Let not undersized intellectual youth be discouraged lest they cannot succeed in college teaching; just as the short-of-stature Napoleon was a great general, so some of the most popular and successful teachers of today are men whose intellectual and inspirational magnitude is in inverse proportion to their frail frame and small avoirdupois. Standards of attractiveness in men are never very well established in the popular judgments, but there are always men who, casual observers contend, make an unfortunate appearance, yet some of these in college chairs are remembered gratefully by many devoted former students. Some men of the most notorious ugliness of body have been obliged to flee, for efficiency's sake, from their numerous women admirers; if ugliness may not be a handicap with the favorable attentions of the other sex, should it be badly feared in the less personal and quite calm associations of the college class?

Mannerisms are generally a bug-bear in the apprehensions of those who aspire to public or professional popularity, and doubtless, other circumstances equal, they often injure, yet they are, notwithstanding, sometimes adopted along with a pose and become secrets of popularity. Some admired teachers are always awkward, not knowing, for instance, where to keep their hands or being able to stand except on one leg, and though this may be annoying to those who first sit in the lecture hall, perhaps later it comes to be part of the expected and appreciated formal behavior of the men so facile with thought. The old-time professor might neglect to change his tie for weeks or he might wear the wrong suit to class; if proprieties are more rigorous nowadays they do not preclude a certain amount of neglect of personal appearance by men whose thoughts are on time and eternity, or germs and electrons; whose business it is to know, and to vend truth and science. Especially in teachers of the humanities an artfully quaint appearance may be at a premium—if only one's quaintness happens to hit the right cord in the foibles of possible admirers. It does a man little harm to be gently smiled at because of his eccentric ways, if only other redeeming qualities save him from being thought ridiculous. A conventional appearance saves a teacher worry for fear that some superficial mind will rate him for unfavorable non-essentials, but at the same time mild unconventionalities may be appreceived as salt and flavor by the same superficial appraisers.

There are successful teachers who gesture with their whole body, or who contort it more or less into an unnatural position as they talk. A wise look or an unmeaningful smile when adopted as a pose are not generally interpreted as conceit or hypocrisy, rather they seem the expression of a good personality.

The so-called nervousness of those who cannot keep hands still or face straight, who laugh without much excuse, whose bodily unquiet impresses others as evidence of uneasiness may irritate students or side track their attentions, but usually only for a time at first acquaintance, and in time the man who is unconsciously so handicapped, if he has something worthwhile, gets appreciation.

Whether a marble-like excellent of posture is better than unsteadiness and useless self-activity before a class would in the past have been answered quite affirmatively; the classic performance of mental and physical rigor was deemed of itself an art of high intrinsic value. But granting excellent oratorical ability to accompany such placid personal habits, there are spokesmen for the unstable lecturer. The beauty of

his delivery does not get monotonous, while the student of any college capacity is not easily decoyed to attending specifically to the fretful behavior of the men who cannot make his professional into one of a classical mould. There certainly are successful "nervous" teachers.

And old idea of discipline for school children forbade all motions in the room except the speech movements of the teacher and the reciting pupils. Some college ideals are still a good deal like this. And there are successful teachers who without using a particle of force or threat rule order with an iron hand. How the personal tactics and air of the quiet disciplinarians succeed as they do, apparently without any attention, is the despair of those who have tried to run classes with never a whisper and hardly a smile, and failed. Those who succeed unquestionably get glorious results not unfrequently.

And while no one has yet been found to impute a pedagogic value to a lecture room constituted of visiting parties, correspondents, candy-eaters and tobacco users, it is evident that interested students may without harm pass an occasional relevant word about subject matter, relax their bodies for easier inception of ideas, and get into a breezy mental contact with the instructor. A successful teacher always maintains respect from his classes but he does not necessarily maintain silence. Some of the best teachers receive many volunteered illustrations and instances or even general thoughts in the course of a lecture. Strange as it may sound, a certain small amount of relaxed activity in the college class room prevents students from having lapses of attention. The ideal advanced class, graduate class in particular, is of course a Socratic circle. And the Socratic method perfectly applied remains the supremely excellent technic of class management.

Successful college teachers do not necessarily have to set a standard of unflagging intellectual effort. Those who do this create respect for their industry and maybe get credit for more brilliance than they possess. But a halo of worth goes about the man who is brilliant without studying, and if he does not so much inspire admiring students to lives of rarified intellect, he at least is apt to command efficient work. The grind in American college faculties has to win his status by his scholarly efficiency; the careless genius may get his rating largely through extra-scholarly activities, the interest in which will perhaps make more efficacious his professional teaching.

When looking for types of social behavior in college faculties we certainly discover the following: there is the human ice-berg who always knows what to say in his class room and

when he has on a dress suit, and refrains from saying anything at other times. His etiquette is unimpeachable, his grammar perfect, his smiles unwasted. He associates with his students, and with most other people, across a frigid social gulf, and as students never come to him except on business his college work is ended when his classes are over, unless there are formal evening entertainments. The caste of such a man is generally high, and if he handles indelicate subjects it protects him.

At the other extreme in sociability is the informal social democrat, always approachable, always intelligently talkative, humanly wise, ready to receive any communications and sympathize with any heartaches. His manners are apt to be careless, and formal receptions bore him until he disturbs or avoids them. He makes a less grand figure, but he is especially attractive as a companion to the more individuated and refined students. Much of his time is likely to be consumed by visits, some of which are not very profitable to any one. Though likable, he is in danger of losing caste, yet this will generally revive when his human character gets better known.

There is also the rather formal but nevertheless very adjustable type of professor, the one who is always into everything, a stock committeeman, interested in athletics and social service, an attendant at church, and at college dances and a good sportsman as well. He always knows everyone, but rather superficially so. He is a "good scout," not a spiritual adviser.

Besides these three types of social characters there are very numerous mutuants and blends of them. All are represented among good teachers. And all, of course, have some times failed to get much favorable recognition. There is no indispensable social quality in a teacher.

Even in the morals of good teachers relativity prevails. It is true that great latitude is allowed only in a few large universities, and there an open breach of sexual morality, if it becomes public, may mean immediate professional downfall, though as several recent instances show, not great loss of standing with former pupils. The old standard which laid out a single straight and narrow path for teachers has crumbled almost everywhere, and it is recognized by appreciative pupils and colleagues that there are different ways to be good, and, even, that once in a while a heroic defiance of certain existing mores is as redeeming as unerring commonplace goodness. Devotion to moral ideals is a great asset in those who would be beloved teachers—witness noted current instances,—but despite this, several teachers who are now exert-

ing really the maximum possible influence and have the greatest bodies of devoted disciples, have shown devotion to the truth ideal only, disclaiming all moral concern. It is true that this type seems to require a rather specially prepared social medium, i. e. a large university before it can find nourishment.

As the scientific ideal has come to reign, and it has been thought better to consult fact than to give advice, there has arisen some popular dislike for preachers. Hence there are numerous college teachers who *do not preach*, but confine themselves to teaching and investigating.

For a long time method has been the object of both scientific inquiry and speculation. And with the multitude of different species of method there has been much experimentation. Therefore, one uninformed might imagine that proper specific methods for particular student groups have been discovered. This does not appear to be true for elementary education, and it certainly is not true for collegiate education. No one can say in a given case that some particular method is the only one to use. Given any actual class there appear always to be various procedures by which the learning process can be encouraged to start and continue.

One man will make a success of deduction, of texts and lectures which proceed from fundamental theory to its concrete implications; another's expositions proceed in reverse order to this; each inculcating good habits of inquiry and thought, as well as a respectable store of ideas. Sometimes a systematic teacher is regarded as brilliant, and he makes good students; a teacher who has no system is also regarded as brilliant, and he has good students. Some teachers lay off their subject matter elegantly with complete inattention to the particular mental contents of the learners, while others think that in college as elsewhere some attention should be given to the *appreceptionmasse*, or to the background of ideas, in the students. Both may get good results. There are lucid instructors who use abundant concrete illustrations and there are obscure, if profound, instructors who deal in abstractions. The former makes fewer demands on thinking and associative powers, but both disseminate their notions. Some lecture, some use texts; some require careful notes, some furnish them beforehand typewritten. And so the multiplicity of working methods prevails.

We have proceeded far and comprehensively enough to give a good portrayal of the variety of traits found in successful advanced teachers. Anyone who wishes further data can get it by visiting college lecture halls.

It cannot be said, offhand, that any particular trait, habit or art is the cause of a teacher's success. He may be successful only in spite of, not successful through or because of it. It is often hard to determine whether a trait is an asset or a handicap. But such a doubt does not alter the frequent fact that the in some ways unpromising teacher succeeds, and often in a marked measure. It can safely be said that a man can hardly be cursed with any particular apparent defect or variation but that *somewhere*, granting other redeeming qualities, he can become an inspiring teacher.

The question arises, however, whether for a certain community and school there is not an ideal combination of personal and professional traits, which when possessed by a man guarantee the greatest measure of success. We assume that no one will take the next speculative step and ask whether there is such a thing as an ideal teacher, suitable for *any* community. Of course there are personal traits and habits and ideals which would splendidly fit in certain communities, especially rather provincial ones, but would not be assets in many other places.

But it is an open question whether one can describe an ideal professor for a given college class, say nothing about a college. Furthermore, individual students may be potentially adjustable in the happiest way to a number of types of men—indeed, is this not often the case, where a student likes all the members of the faculty for their different qualities and finds the variety valuable? There are, on the other hand, always some students who can not get into sympathy or cooperation with certain teachers. Everyone finds certain persons in life who are not agreeable, and a variety of others who are each in his or her own way congenial. And it is a misfortune to students when they get in the class of a man whom they "cannot get," do "not like," or have strong prejudices against. They may learn from him whether they like him or not, but they are in a poor state of mind to do so, if they remain hostile. Of course they may eventually, by self-adaptation, learn to like him.

The spirit of a class and community count for much in questions of popularity, and professional adjustment. If a man comes well recommended and with the right affiliations, his caste is good, and it obscures his defects to potential detesters. The favorable opinion of a majority of the students may be contagious with the reluctant minority, and a leader may swing a whole class in either direction, sometimes. A favorable tradition once established protects a man in large degree. Accidents and luck, uncalculable circumstances, always count for much as to how a man shall be liked; if by an unwitting

accident or mistake he antagonizes a few sensitive students, or faculty members, he may have a nest of enemies who will capitalize any behavior that would anywhere be considered as erring, and use this as tools with which to undermine him. Some persons take a feral delight in exerting their power and skill for destroying another man, especially if he be in any sense a rival.

In every community there are particular standards or customs or ideals which lend a man prestige and appreciation when he subscribes heartily and sincerely to them. It may be that a combination of orthodox church-going, amateur dramatics, giving good advice, and palid conversation are as a group in vogue. If a man will make himself enthusiastic about one or two of these and be tender but inactive about the others he will stand a good chance of "being in well." Whatever one's defects are these do not hinder him from lending his support to some of the group of popular activities. But if he pursues his own tastes to the entire exclusion of the popular ones his way is likely to be hard. In another community altogether a new group of activities may be in vogue. And in a large university the matter of being popular in the community at large does not appreciably count,—that is, only the exigencies of his teaching and student and faculty associations militate for or against a man's security.

It stands to reason and observation, also that a teacher may be undone in a particular position, and in some succeeding ones, by a single powerful enemy. He may be dismissed on a trumped up charge, and find it hard to get a position again. As fortune will have it the gifted man sometimes goes under with these circumstances; the handicapped one may by tact and favor succeed.

There are doubtless men of high intellect and ability who can never succeed as teachers, who always fail to interest and inspire students. One of these may try twenty universities, and if he does not kill his chances by lack of tact, some agency eliminates him because of some trait that has seemed to it, in its authority, unlikely. But there are few men so forsaken of academic charms as to make their uprooting anywhere a matter of destiny. Most would succeed if they could try long enough—some of course much easier than others. Finally, most popular men would be in a degree unpopular under certain new circumstances but slightly different from their present ones, but a few adaptable ones would make their way in many different environments with comparative ease.

In conclusion: success making popularity in college teachers, like popularity in persons elsewhere, is really a subtle

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thing, and very complicated. But it is not such a phenomenon but that most mentally capable persons could not succeed in attaining it, were they able to make a fair number of trials. Traits and methods which are generally supposed to work unfavorably, also, often work favorably as conspicuous cases show.

This paper has dealt with success-making in college teachers. The same principles must apply to secondary and grade schools, but probably with less latitude. Greater *relative* conventionality is required in the lower schools, but there is still room for variation.

In the schools of a democracy teachers need not be all of the same mould. Success is liberal to the variant.

## A STUDY OF THE SLOW AND OVER-AGED CHILD

By ROBERT P. BROOKS

"There are misfit schools, misfit texts and studies, misfit dogmas and traditions of pedants and pedantry. There are misfit homes, misfit occupations and diversions. In fact, there are all kinds and conditions of misfit clothing for children but—in the nature of things there can be no misfit children."<sup>1</sup>

We may accept the principle that there are no misfit children, yet we all know that we have pupils who are constantly demanding more attention than the ordinary child. These are the ones who are making teaching burdensome to the teacher; who are taking much time from the normal and bright children and yet they persist in lagging behind the rest of the class. They, as a rule, dislike school. They comprise a very large per cent. of the disciplinary cases of the class and school. They are slow in their work and are over-aged. We all recognize them. We all have them. We do not always know all of them.

These are the children who refuse, for reasons of their physical and mental make-up, their environment, their birth conditions, development, heredity, etc., to be planed and compressed into the same molds as their fellows—the "average" normal and bright children. They are misfits in *this* sense and in only *this* sense. They are different from many of the other children. They must have attention. It is a matter of history that Hawthorne, Scott, Froebel, Wellington, Webster and Sir Isaac Newton were children of this class.

### THE PURPOSE OF THE STUDY

The purpose of this study was to discover how serious a problem this type of child was in school; (2) to better adjust the school to these unfortunates; (3) and, as far as possible, to minimize the number of misfits in the future.

### HISTORY OF THE STUDY

This problem of over-age along with slowness was little thought of in America until about 6 or 8 years ago. However,

<sup>1</sup> Fred. Burk. Report of San Francisco Normal School Monograph C, "Individual Instruction."

as far back as 1872, Doctor Harris was awake to the fact that there were many misfits in the schools of St. Louis but the educational world was not then ready for this study. Practically no thought was given to this problem in our Public Schools until 1904 when Superintendent Maxwell brought it to the public. Little was done in New York until seven years later when he stated to the Principals of that city that, "every child is entitled to all the education that he is capable of receiving." . . . also, "that the greatest possible number of children should be made ready for promotion with fairly good preparation at least."<sup>2</sup>

This same year, 1911, Dr. Leonard Ayres made an exhaustive study of the problem of over-age and slow progress in twenty-nine representative cities of the United States.

In practically all of the recent surveys this problem has been considered. Many educational authorities declare that it is one of the most pressing problems for Administration at the present time.

#### MEANS OF APPROACH

There is entire agreement, I believe, among Educators as to the seriousness of the problem resulting from the presence of over-age and slow children. There has been considerable disagreement as to the methods of identifying and locating such children.

Since the study made by Dr. Ayres in 1911, it is pretty generally conceded that we need to use both the age and the progress standards. We need to use both of these standards, for we find that, on the average, the slow children are as numerous as the over-aged ones, but we have discovered also that the two groups are in a large part made up of different individuals.<sup>3</sup>

In this study, those pupils who are both over-aged and who have made slow progress are defined as "Misfits."

#### DATA FOR THIS STUDY

I selected Grades Three to Six-B inclusive for this study. I began with the Third because this is the grade where our non-promotions first begin to be seen to any considerable degree. I ended with the Six-B because that is the highest class in the school.

Three hundred seventy-one pupils were classified according to the age and progress record used by Ayres, with the result that 54 pupils were found to be slow and over-aged.

<sup>2</sup> How to Help the Backward Child. W. H. Maxwell, 1911, Address to Principals.

<sup>3</sup> The Identification of the Misfit Child. Leonard P. Ayres. p. 12.

### CAUSES OF RETARDATION

The chief causes of laggards are: (1) late entrance (this, however, was not an important factor in this school); (2) irregular attendance; (3) physical defects; (4) mental defects; (5) courses of study not adapted to children and made out largely to fit the bright child; (6) inflexible grading; (7) bad environmental conditions.

It has been my purpose to discover, as far as possible, the most glaring defects in our school management which has had a tendency to aid other causes in developing misfits. We have investigated the conditions existing in many of the homes of these unfortunates. We have tested all to discover their mental status. We have examined all quite thoroughly for physical defects.

After considerable study of the group as a whole, I have eliminated from the group twenty-eight pupils. Seven of these left to go to work or were transferred. Ten were retarded mentally and chronologically only one year and this retardation was largely due to late entrance. Seven were retarded either by irregular attendance due to sickness, frequently changing of schools and by considerable attendance in parochial schools. Four cases seemed so slight that they were not pressing.

This elimination leaves twenty-six pupils for further detailed study. Seventeen of these have been placed in an ungraded class for observation and nine are in regular classes.

### REMEDIAL MEASURES

#### *School Management*

We have found that our problem is much less a matter of late entrance than the progress through the grades.

The young pupils, that is, those entering school before the age of six, have made the most rapid progress and the highest percentage of normal progress.

It is a fallacy that the child entering late catches up with the one who begins early. This is only in rare cases. We have found that the best age for entering the Kindergarten is at five and the First Grade at six. Pupils who enter earlier are too immature as a rule and usually fail at about the Third Grade and oftentimes are obliged to remain in the Third Grade from  $1\frac{1}{2}$  to  $2\frac{1}{2}$  years.

#### *Special Classes*

I have organized two classes for special pupils. One is a class with a maximum capacity of fifteen pupils who are

feeble-minded in various degrees. This class has been organized for several years. It is our policy to receive pupils in this class who are two or more years retarded pedagogically and also mentally if their chronological age is between eight and nine years; also those who are retarded pedagogically and mentally three years or more if their age is between ten and twelve years.<sup>4</sup> We often find children who are very backward in their school status and who, measured by intelligence tests, are quite normal. It is our purpose to exclude these from our special class for the feeble-minded.

We believe that the feeble-minded child, i. e., those below the Middle Grade Moron, should remain in the class only a sufficient time for his condition to be accurately diagnosed, or until a place can be found for him in a suitable institution. The influence of these low-grade defectives on the high-grade defectives is as bad as the influence of backward and high-grade defective children on normal pupils of a regular class. The public school is no place for the education of the feeble-minded below the Moron Grade at least. The presence of low-grade defectives in the majority of the special classes in our public schools is accountable for the little educational value of these classes, in many instances.

In our opinion, the chief objects of the class for defective children is to give them such training that will lead them to be happy, self-respecting and self-supporting. With these ends in view, we have divided our work into three classes, viz., Academic, Physical and Manual. We regard the first by far the least important for we have found that our pupils do only "parrot work" in the 3 R's. They cannot apply their knowledge. A boy may have a reading vocabulary of 200 words, but he will not pick up a book and attempt to read it. A girl may know her tables, but when she is asked to solve a one-step problem in multiplication, she is all "at sea."

The physical side consists of gymnastics and games and marching.

We have a Victrola which we use for furnishing music for marching for gymnastics and for folk dancing.

The manual side of our work has been very productive and the results in this work for the past year have been most gratifying.

In the first five months of this school year, this class has made and sold \$118 worth of reed baskets and trays varying greatly in style; it has caned 72 chairs valuing \$42; made and sold six dozen floor and hand brushes. Besides these, the

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<sup>4</sup> See Stern & Whipple. *The Psychological Methods of Testing Intelligence.* p. 78.

pupils in this class have woven several rugs, 30 x 54". The girls have made aprons, table mats, tam o'shanters, boudoir caps and slippers. Last year they sold to the board of education a trial order of \$180 worth of brushes. A few days ago we received word from the board of education that they will take all of the brushes that we can make in the remainder of the year.

A visit to the class would convince one that the pupils are happy. Under the influence of a very exceptional teacher, they are becoming very self-respecting. That they are becoming fast self-supporting is readily seen by the great amount of initiative and ability in independent work. Several of the boys are caning chairs at home. A local brush factory offered to employ the boys, who make brushes, in the summer and would take them at once but for the Compulsory Attendance Laws. We are teaching them to save their money through the school savings bank and we have been very successful in this endeavor.

#### *The Ungraded Class*

The other "special class" is the ungraded class designed to accommodate a maximum number of twenty pupils, who are backward and "peculiar." It is in this class that I placed seventeen of the most pressing cases of the 54 misfits. In this class, we are observing them and are trying to bring some of them up to grade that they may be returned to the regular classes; others will be given special training that will enable them to secure working papers; others will be kept until there is room for them in our class for defectives.

The teacher of this class is not confined to any definite amount of work to be covered. Her work is to study her pupils—find out whether they are defective or backward, find out whether they are handicapped by any physical or neurological defect, whether they have been hindered in school progress by environmental conditions, through heredity, severe illness, etc., etc. The essentials of the most important subjects are taught with considerable emphasis on manual work, including cooking, cleaning, sewing, darning, weaving of rugs, mats and baskets, caning of chairs, brush making, making of paper flowers, hammocks.

Classes of this type are expensive and probably at first thought the value may not seem to be commensurate with the cost.

The monetary costs of these classes are only one small item. We are fully aware of the disastrous results arising from having repeaters left in regular classes. These repeaters—chronic repeaters, if they may be so termed—lose interest and

self-confidence and usually soon form the habit of failing. Most of the extreme cases cannot be brought up to grade, but these unfortunates can get much more profitable training in ungraded classes than in a regular grade class. We know how this type clog the educational machine, how much of the teacher's time they consume, how they pull down the standard of achievement of the other children and become themselves disheartened and dejected or else hardened and apathetic. These usually become the individual drags on the road to vice, pauperism and crime after they leave school.<sup>5</sup>

"Classes for children who require a little special helping to bring them up to grade or to normal standards, as to help them over some temporary difficulty, are among the wisest and most helpful expedients in our public school policy."<sup>6</sup>

### *Flexible Grading*

We have semi-annual promotions. In so far as possible, we group our pupils into classes which will contain those having approximately the same ability, e. g., if we have two 5-B's, one will contain those pupils who are able to do the maximum amount of work and the other will contain those whose abilities are not so great and who work slower. Within the classes the teachers group their pupils into the quick-bright and the slow-dull divisions. Any pupil having the ability to do a higher grade of work than that done in the grade in which he is a member, may be promoted at any time regardless of some of the facts of the grade which he has not yet mastered.

### VISITING OF HOMES

The teacher of the ungraded class has visited the homes of many of her pupils and has been helped very materially by those visits in the better understanding of her pupil's peculiarities and handicaps.

### MENTAL TESTS

The Binet tests were given to the 54 misfits by one who has had considerable training in giving tests. We found by these tests that many of these pupils test normal, or nearly so. Nine tested from two to three years below normal; eight from three to four years below normal; five tested between four and five years below and two tested five years below.

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<sup>5</sup> Portland Survey; Medical Inspection. L. M. Terman.

<sup>6</sup> The Training of the Defective Child. H. H. Goddard.

#### PHYSICAL EXAMINATION

All pupils have been examined by the school physician to discover any defects of sight and hearing, nose and throat obstructions. The cases needing attention have been attended to in most cases in hospital clinics.

One child has been treated for hyper-thyroidism. Several have procured glasses. One girl has had tonsils removed. Milk is being furnished in school for those whose physical condition is in a low state. Several are receiving medical treatment for organic disorders.

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#### VALUE OF THIS STUDY

As a problem in administration, outside of direct beneficial results to individuals in the school, the greatest value of this study to me has been that of having the interests of the unfortunates in mind. I believe we too often are so concerned with the machinery of the school that we consider too little those among us who are much in need of our attention, thought and sympathy.

## SHOULD STUDENTS RECEIVE CREDIT FOR RECREATIONAL PURSUITS?

By LeRoy ARNOLD

When Woodrow Wilson was President of Princeton, he made the observation, now well nigh proverbial, that the side shows were usurping the place of the main circus in American college life. Student activities outside of the classroom are rapidly on the increase. Some see in this tendency the beginning of the end, others the end of the beginning.

The war has brought to a focus the clash between traditionalists and futurists. At the same time, the desire for co-operative efficiency is superseding petty academic disputation. How best can our educational system serve the nation? That is the question paramount. Corollary: how best can we systematize our education? In high schools long since, and now in colleges and universities, the old curriculum is giving place to a new one. Many educators view the situation with the gravest alarm. Have we lost the classics? Are we to have nought but vocationalism? Further, are we now to lower the bars entirely and to grant credit to students while they play? Has it come to this? Why do some of our best institutions give academic credit for playing in a college band? The Secretary of the Faculty of Arts and Sciences of Harvard writes, "Harvard University does not base its degrees on such work as students may take for their amusement." On the other hand, the University of California, ranked with Harvard in the first class by Dr. Kendrick C. Babcock of the national Bureau of Education, grants credits for athletics and dramatics, debate and practice in music and art,—all, to be sure, under faculty supervision. Conservative and radical tendencies are by no means confined to the Atlantic and Pacific coasts. Extracurricular activities are not honored as credits toward graduation at the University of Wisconsin, although gymnasium work and military drill are required of Freshmen and Sophomores. On the other hand, the University of Nebraska, also with Wisconsin in the first class of Dr. Babcock's list, offers a maximum of one hundred and thirty-two credits in so-called extracurricular subjects, with one hundred and twenty-five the total required for graduation.

To be sure, no one imagines that the University of Nebraska graduates a student who passes nothing except work in gymnasium, football, track, music, glee club, band, chorus, dramatics and art; and yet the statistics from the Registrar's office give color to such a fantastic possibility. Harvard and California, Nebraska and Wisconsin are extremes, but the surprising fact is that some of these so-called extracurricular activities are recognized by ninety-seven out of one hundred representative colleges of our country.

Should students receive credit for recreational pursuits? Whether or not they should, they do. The inconsistency with which the large number adopt some and reject other pursuits shows the need of an investigation, not merely for the sake of bringing into the open what has become the prevalent custom, but also for the purpose of determining, if possible, some underlying principle. Accordingly the following questionnaire was sent to some hundred of our representative colleges:

1. How many semester hours, including "extracurricular" credits, do you require for graduation?
2. How many in gymnasium work are required for graduation?
3. How many credits, if any, are granted for gymnasium work?
4. For football? 5. Baseball? 6. Basketball? 7. Track?
8. Other forms of athletics?
9. How many credits are granted in the history or theory of music? 10. In the practice of music?
11. How many credits, if any, for participation in the glee club? 12. Band? 13. Other musical organizations?
14. How many credits for participation in dramatic productions? 15. For debate outside of the classroom?
16. For oratory outside of the classroom?
17. For editing a college newspaper? 18. Magazine?
19. Other publications?
20. For the history or theory of art? 21. For the practice of art?

The wide spread interest in these questions is evidenced by the hearty response. To one hundred and fourteen inquiries one hundred and five answers have been received, a surprisingly large percentage. Many replies have come in the form of detailed letters, accompanied by catalogs. There are numerous requests for results. The reason for this interest is ap-

parent: it is the urgent need of the hour, felt by faculties and students alike, to concentrate on the things which are worth while.

A word as to the mailing list. The basis is the list made by Dr. Babcock of the national Bureau of Education. Our list includes all of the colleges which he put in the first and second classes, together with a few others added by a committee for various reasons. Technical and scientific schools are excluded and only the colleges of liberal arts of universities are considered. All of the best known and a few of the less known colleges were included, and 92% of them replied. The result, whatever one may think of omissions and commissions, is fairly representative of the colleges of the country. All of those replying, together with the answers to the first segment of the questionnaire, are as follows:

TABLE I: PHYSICAL EDUCATION

(A NUMBER INDICATES THE NUMBER OF SEMESTER HOUR CREDITS OFFERED OR REQUIRED.

WHEN TWO NUMBERS ARE GIVEN, THE FIRST IS FOR WOMEN, THE SECOND FOR MEN.

A STAR INDICATES THAT SOME CREDIT IS OFFERED OR REQUIRED.

A DAGGER INDICATES THAT THE SUBJECT MAY BE SUBSTITUTED FOR GYMNASIUM WORK.)

Institution	Total Credits	Gym. Req.	Gym. Max.	Foot Ball	Base Ball	Basket Ball	Track	Other Athletics
1. Albion.....	120	*	..	..	..	..	..	..
2. Allegheny.....	120	*	..	†	†	†	†	..
3. Amherst.....	*	*	..	..	..	..	..	..
4. Baker.....	120	4	..	..	..	..	..	..
5. Barnard.....	124	4	..	..	..	..	..	..
6. Bates.....	122	*	..	..	..	..	..	..
7. Beloit.....	124	8	2	..	..	..	..	..
8. Boston.....	120	1	2	..	..	..	..	..
9. Bowdoin.....	120	12	12	†	†	†	†	..
10. Brown.....	120	*	..	..	..	..	..	..
11. Bryn Mawr.....	120	*	..	..	..	..	..	..
12. Butler.....	120	8	..	..	..	..	..	..
13. Carleton.....	126	6	6	†	†	†	†	..
14. Clark.....	120*	12	..	..	..	..	..	..
15. Coe.....	124	4	4	†	†	†	†	..
16. Colgate.....	136	4	..	†	..	..	..	..
17. Colorado.....	126	6	6	..	..	..	..	..
18. College of City of N. Y.....	128	2	..	..	..	..	..	..
19. College of Wooster.....	124	2	4	†	..	†	†	..
20. Columbia.....	124	4	4	†	..	†	†	..
21. Cornel College, Iowa.....	124	4	4	..	..	..	..	..

TABLE 1. PHYSICAL EDUCATION.—*Continued*

Institution	Total Credits	Gym. Req.	Gym. Max.	Foot Ball	Base Ball	Basket Ball	Track	Other Athletics
22. Cornell University.....	020	12	16	..	..	..	..	..
23. Dakota Wesleyan.....	120	1	1	..	..	..	..	..
24. Dartmouth.....	123	4	4	..	..	..	..	..
25. Denison.....	124	4	4	..	..	..	..	..
26. DePauw.....	124	4	4	..	..	..	..	..
27. Dickinson.....	134	6	..	..	..	..	..	..
28. Drury.....	124	*	..	..	..	..	..	..
29. Georgetown.....	120	*	..	..	..	..	..	..
30. Goucher.....	120	..	..	..	..	..	..	..
31. Grinnell.....	120	8,4	..	..	..	..	..	..
32. Gustavus Adolphus.....	130	6	..	..	..	..	..	..
33. Hamilton.....	*	*	..	..	..	..	..	..
34. Hamline.....	122	2	2	..	..	..	..	..
35. Harvard.....	*	..	..	..	..	..	..	..
36. Haverford.....	132	4	4	..	..	..	..	..
37. Hobart.....	120	*	..	..	..	..	..	..
38. Holy Cross.....	*	..	..	..	..	..	..	..
39. Illinois Wesleyan.....	128	..	..	..	..	..	..	..
40. James Milliken.....	130	*	..	..	..	..	..	..
41. Johns Hopkins.....	125	..	..	..	..	..	..	..
42. Kenyon.....	128	..	..	..	..	..	..	..
43. Knox.....	124	4	4	..	..	..	..	..
44. Lafayette.....	*	2	2	..	..	..	..	..
45. Lake Forest.....	*	4	4	..	..	..	..	..
46. Lawrence.....	120	4	4	..	..	..	..	..
47. Lehigh.....	*	4	4	..	..	..	..	..
48. Leland Stanford, Jr.....	120	*	..	..	..	..	..	..
49. Macalester.....	127	1	1	..	..	..	..	..
50. Middlebury.....	123	3	3	..	..	..	..	..
51. Morningside.....	120	12,8	..	..	..	..	..	..
52. Mount Holyoke.....	120	6	..	..	..	..	..	..
53. Municipal Univ., Akron.....	128	2	2	..	..	..	..	..
54. New Hampshire.....	132	6,0	8	..	..	..	..	..
55. New York University.....	126	4	4	..	..	..	..	..
56. Northwestern.....	120	..	..	..	..	..	..	..
57. Oberlin.....	*	2	..	..	..	..	..	..
58. Ohio.....	120	*	..	..	..	..	..	..
59. Ohio State.....	*	4	4	..	..	..	..	..
60. Princeton.....	126*	6	..	..	..	..	..	..
61. Pennsylvania State.....	130	2	2	..	..	..	..	..
62. Radcliffe.....	*	..	..	..	..	..	..	..
63. Reed.....	*	*	..	..	..	..	..	..
64. Rutgers.....	136	..	..	..	..	..	..	..
65. St. Olaf.....	126	6	..	..	..	..	..	..
66. Swarthmore.....	124	..	..	..	..	..	..	..
67. Smith.....	120	4	4	..	..	..	..	..
68. State University of Iowa.....	125	4,2	4,2	..	..	..	..	..
69. Syracuse.....	124	4	4	..	..	..	..	..
70. Trinity.....	120	4	..	..	..	..	..	..
71. Tufts.....	122	2	2	..	..	..	..	..
72. Union.....	*	..	..	..	..	..	..	..

TABLE I. PHYSICAL EDUCATION—Continued)

Institution	Total Credits	Gym. Req.	Gym. Max.	Foot Ball	Base Ball	Basket Ball	Track	Other Athletics
73. University of Arkansas...	134	4,0	8	2	2	4	4	6
74. University of California...	*	8	9,5	..	..	..	..	..
75. University of Chicago...	*	*	..	..	..	..	..	..
76. University of Cincinnati...	124	4	..	..	..	..	..	..
77. University of Colorado...	122	2	2	..	..	..	..	..
78. University of Denver...	124	..	4	..	..	..	..	..
79. University of Illinois...	130	3,2	7	..	..	..	..	..
80. University of Kansas...	120	10	..	..	..	..	..	..
81. University of Maine...	125	1	..	..	..	..	..	..
82. University of Michigan...	120	8,4	..	..	..	..	..	..
83. University of Minnesota...	120	*	6,4	..	..	..	..	..
84. University of Nebraska...	125	4,0	8	4	..	..	2	1
85. University of North Dakota...	125	3	5	..	..	..	..	..
86. University of Oregon...	124	4	4	..	..	..	..	1
87. University of Rochester...	124	4	4	..	..	..	..	..
88. University of So. Cal...	124	4	4	4	4	4	4	..
89. University of South Dakota...	128	..	..	..	..	..	..	..
90. University of Texas...	120	12,6	..	..	..	..	..	..
91. University of Vermont...	142	*	..	..	..	..	..	..
92. University of Virginia...	*	..	..	..	..	..	..	..
93. University of Wisconsin...	*	*	..	..	..	..	..	..
94. University of Washington...	120*	8	8	..	..	..	..	..
95. Vassar...	111	*	*	..	..	..	..	..
96. Vanderbilt...	128	*	*	..	..	..	..	..
97. Washburn...	120	10	..	..	..	..	..	..
98. Washington and Lee...	126	6	..	..	..	..	..	..
99. Wesleyan...	120	*	..	..	..	..	..	..
100. Western Reserve...	125	3	3	..	..	..	..	..
101. West Virginia...	128	..	6	..	..	..	..	..
102. Wellesley...	118	2	2	..	..	..	..	..
103. Wells...	116	*	..	..	..	..	..	..
104. Williams...	124	..	..	..	..	..	..	..
105. Yale...	120	..	..	..	..	..	..	..

The total number of credits required for graduation, exclusive of gymnasium work, in the majority of institutions, is something like one hundred and twenty. If it were feasible for all American colleges of liberal arts to adopt the semester plan, with, approximately, the one hundred and twenty hour credit, this standardizing of the grades would facilitate the systematizing of the higher education.

#### GYMNASIUM WORK

The negative grade for gymnasium work is one of the anomalies of our educational system. Gymnasium work, or its equivalent in physical training, is regarded as an essential

by the great majority of our best colleges. Only the ultra-conservative offer culture for the mind, at the expense of body and soul. Indeed, as yet, there is very little attention paid to the soul—except in Tagore's school in India—but that is another question. The body is now receiving the attention it deserves: 83% of our colleges require gymnasium work of all their students, while in 86% of them it is either required or elective. Only 12%, however, offer electives for credit. Moreover, in the majority of cases, no credit whatever is given toward graduation, although the student is required to attend gymnasium classes for one or two years before receiving his diploma. Why no positive credits for required gymnasium work? Would it not be logical to grade floor work in the gymnasium as *excellent, good, pass, condition, or fail?* To one who knows the psychology of the student, the resultant improvement would seem inevitable. Perhaps one reason why gymnasium work is irksome to many is because it is forced upon them, with no recognition by way of grades. The faculty now virtually says to the student: "You must do this gymnasium work. If you do it well, you get no credit for it. If you do it poorly, that will not affect your general record. The only thing that we demand of you is that you attend the class." Physical training is a comparatively new subject. It has slipped into the old curriculum, but is still not recognized as of positive educational value.

The women's colleges, with the exception of Radcliffe, require physical training of all students. Gymnasium work is generally supplemented by outdoor sports, folk dancing, and the like. At Mt. Holyoke, for example, gymnasium work, required of every student for the first three years, is supplemented by systematic out of door exercises.

#### FOOTBALL AND OTHER ATHLETICS

It is surprising to find that twenty-seven colleges (26%) give some form of credit to those who enter football or other athletic contests. True, twenty-two of them merely allow football or other games to be substituted for gymnasium work, usually in season. Columbia, for example, credits half of each semester's work in football, baseball, basketball, track, or other athletics to practical gymnasium work. At Barnard, athletics, swimming and dancing can be substituted for gymnasium work, while at Goucher the hundred and sixty hours of gymnastics required of every woman includes swimming, folk dancing, hockey, basketball and walking.

Very few colleges give credit for athletic contests as though they were academic courses. At the University of

California they actually are academic courses, so scheduled in the catalog, and the instructors are members of the faculty. California grants one-half unit credit for two hour courses in track, Rugby football, soccer, baseball, basketball, boxing, wrestling, fencing, swimming and general recreation. The last named includes handball, tennis, playground baseball, volleyball, basketball, field hockey, golf and cross country walking. There are also advanced courses in boxing, wrestling or fencing, four hours each, with one unit credit. The systematic listing and grading of these courses is a unique acknowledgment of their educational value. One wonders if the climate of California is producing something of the old Greek ideal of physical culture. At the University of Southern California four credits each may be obtained in football, baseball, basketball, and track. At the University of Denver, where no gymnasium work is required, but where four credits in gymnasium work are permitted toward the degree, one credit a semester is permitted in football, baseball, basketball and track, but a student is limited to four of these credits. At the University of Nebraska a theory class in football is granted four credits and a theory class in track two credits. The University of Arkansas has an extraordinary rule. It grants two credits to "letter men" and one to those who have not won their letter.

To summarize: one-fourth of our colleges, directly or indirectly—usually through substitution—grant credit for participation in football and other college sports.

Seventy-three per cent of our colleges grant credit in either music or art; 62% in music and 57% in art. Usually when one is offered, the other is also, but, curiously enough, sixteen colleges offer music without art, and twelve art without music. There are many large departments, particularly among the big universities. The women's colleges all specialize in both music and art, except Bryn Mawr, which has neither, unless one counts two points in the physics of music. Barnard offers twenty-six credits in music and forty in art. "All are rarely taken by one student," the Registrar observes. In those rare cases the student has more than half her work in these two departments. Only a few colleges limit the number of courses in the history or theory of music or of art which may be elected. The majority regard these as they would any others in the curriculum, and, with the possible exception of the arrangement at Johns Hopkins, where credits are accepted from a local conservatory of music, these subjects are not, strictly speaking, extracurricular. Indeed, under proper direc-

TABLE II. MUSIC AND ART

(FIGURE FOLLOWED BY STAR INDICATES CREDIT FOR THEORY AND PRACTICE.

STAR WITHOUT FIGURE INDICATES THAT A NUMBER OF COURSES ARE OFFERED.

Institution	Music	Practice	Glee	Band	Other	Art	Practice
Albion	10	4	..	..	4	3	..
Amherst	6	..	..	..	..	6	..
Baker	21	..	..	..	..	6*	..
Barnard	26*	..	..	..	..	40*	*
Boston	*	..	..	..	..	..	*
Bowdoin	18	..	..	..	..	6	..
Brown	6	..	..	..	..	12	8
Carleton	30*	..	..	6	6	..	..
Coe	*	10	..	..	..	6	..
Colgate	9	6	..	..	..	10	..
Colorado College	4	..	..	..	..	4	..
College of City of N. Y.	6	..	..	..	..	3	..
College of Wooster	10	..	..	..	..	*	*
Columbia	..	..	..	..	..	..	..
Cornell College, Iowa	16	10	..	..	..	8	..
Cornell University	20	14	..	..	..	*	..
Dakota Wesleyan	6	..	..	..	..	2	..
Dartmouth	18*	..	..	..	..	12	..
Denison	10	..	..	..	..	..	..
DePauw	6	..	..	..	..	4	..
Drury	18	4	..	..	..	3	6
Georgetown	24*	..	..	..	..	..	..
Goucher	..	..	..	..	..	8	..
Grinnell	16	..	..	..	..	4	..
Hamline	12*	..	..	..	..	..	..
Harvard	*	..	..	..	..	*	..
Illinois Wesleyan	2	..	..	..	..	4	..
James Milliken	16*	..	..	..	..	32*	..
Johns Hopkins	*	..	..	..	..	..	..
Kenyon	..	..	..	..	..	*	..
Knox	8	..	..	..	..	8	..
Lawrence	4	8	..	..	..	*	..
Leland Standford, Jr.	..	..	..	8	8	..	..
Macalester	32*	..	4	1	..	2	..
Middlebury	12	..	..	..	..	6	..
Morningside	10	..	..	..	..	..	..
Mount Holyoke	14	8	..	..	..	45*	..
New York University	10	2	..	..	..	..	..
Northwestern	20	..	..	..	..	18	..
Oberlin	*	..	..	..	..	*	..
Ohio University	4	..	2	..	..	..	..
Ohio State	..	..	..	..	..	*	..
Princeton	..	..	..	..	..	*	..
Pennsylvania State	4	4	..	..	..	..	1
Radcliffe	*	..	..	..	..	*	..
St. Olaf	12	8	..	8	8	3	..

TABLE II. MUSIC AND ART—Continued

Institution	Music	Practice	Glee	Band	Other	Art	Practice
Swarthmore.....	..	..	..	..	..	8	..
Smith.....	*	8	..	..	..	*	16
State University of Iowa.....	22	15	..	..	..	7	26
Syracuse.....	6	..	..	..	4	2	2
Tufts.....	*	..	..	..	..	..	..
University of Arkansas.....	..	..	..	..	..	..	..
University of California.....	13	20	..	8	8	2	15
University of Chicago.....	*	*	..	..	..	..	..
University of Colorado.....	10	..	..	..	..	2	..
University of Illinois.....	16	18	..	..	..	20*	..
University of Kansas.....	13	..	..	..	..	6	14
University of Maine.....	..	..	..	1	..	..	..
University of Michigan.....	*	12	..	..	..	18	8
University of Minnesota.....	*	32	..	..	..	..	..
University of Nebraska.....	16	8	4	12	4	22	24
University of North Dakota.....	30	8	4	4	4	37*	..
University of Oregon.....	9	4	..	1	1	..	..
University of Rochester.....	..	..	..	..	..	*	..
University of So. Cal.....	15*	*	1	..	1	15*	..
University of South Dakota.....	16	8	..	8	8	*	..
University of Texas.....	..	6	..	..	..	..	..
University of Washington.....	14	24	..	4	1	*	..
Vassar.....	24	..	..	..	..	24	..
Washburn.....	10	..	*	*	*	*	..
Wellesley.....	30	..	..	..	..	30	9
Wells.....	*	..	..	..	..	..	..
Western Reserve.....	6	..	..	..	..	3	..
West Virginia.....	15	..	..	6	..	..	..
Williams.....	..	..	..	..	..	*	..
Yale.....	*	4	..	..	6	*	..

tion, what studies are more appropriate in a college of liberal arts?

There is, however, a tendency to restrict the amount of practical music. The University of Michigan has this rule: "Credit, not to exceed two hours per semester, will be given to students above the rank of freshmen for advanced work in Pianoforte, Organ, Violin, and Singing, taken in the University School of Music, by written permission of the Professor." The restricting of practical music to two credits each semester is also the rule at Smith, Mount Holyoke and the University of South Dakota. The University of Minnesota permits four a semester and the State University of Iowa limits the total to fifteen hours of practical music. "By practical music," says the catalog of the University of Iowa, "is

meant instruction under the direction of a teacher, not individual private practice."

The University of Iowa, it is interesting to note in passing, recently adopted a four-year special course in Graphic and Plastic Arts, leading to the degree of Bachelor of Arts.

In general, then, art or music—usually both, are recognized as appropriate subjects in three-fourths of our colleges of liberal arts, but the practice of music and art is usually restricted, if not eliminated.

#### MUSICAL ORGANIZATIONS

It will doubtless surprise many that nearly one-fourth of our colleges (21%) grant credit for glee clubs, bands, or musical organizations. Of these the largest numbers—seventeen—give credits to students playing in the college band. The credits are restricted in various ways and only a minimal grade is given, usually one credit a semester. The University of Nebraska, for example, grants one credit a semester to members of its glee club, and Leland Stanford Junior one a semester in band. Of other musical organizations given credits, the favorite is the choir or chorus. Yale, for instance, grants six credits for singing in its college choir, and South Dakota eight. In a few colleges the university orchestra is recognized as having educational value: the University of North Dakota grants four credits and the University of California a possible eight for members of their orchestras. The University of California also gives the same credits to band members. Directors of both organizations at California are members of the faculty. Likewise, at the State University of Iowa credits given in Glee, Band, and other musical organizations are only in connection with regular courses in music. Coe, Nebraska and North Dakota, as well as California and Iowa, are consistent in favoring credits for all three musical organizations.

Thirty-eight colleges (36%) give credit for debate outside the classroom. Credits vary from one to three for each inter-collegiate debate.

Only eleven—nearly all of them small colleges—give credit for oratory outside the classroom.

Ten colleges admit that they give credit for plays outside the classroom. Doubtless the percentage is larger, as plays produced inside the classroom are repeated outside.

Carleton restricts the credits for theatricals, band and choir to six, and debate and oratory to six; consequently a student might have twelve of his one hundred and twenty credits (10%) in these extramural pursuits. Leland Stanford has

TABLE III. PUBLIC SPEAKING  
(A STAR INDICATES THAT SOME CREDIT IS GIVEN.)

Institution	Drama	Debate	Oratory
Albion.....	*	2	2
Bates.....	..	3	..
Butler.....	..	2	..
Carleton.....	2	3	3
Clark.....	..	3	..
Coe.....	..	4	4
Colgate.....	..	4	..
College of Wooster.....	..	3	..
Cornell College.....	..	*	..
DePauw.....	*	1	3
Dickinson.....	..	1	..
Drury.....	..	2	..
Georgetown.....	*	..	..
Grinnell.....	..	2	..
Gustavus Adolphus.....	..	3	3
Hamline.....	..	2	2
Lawrence.....	..	3	..
Leland Stanford Junior.....	..	*	..
Macalester.....	..	2	2
Morningside.....	..	3	..
Municipal University, Akron.....	..	*	..
Northwestern.....	..	3	..
Oberlin.....	..	3	..
Ohio State.....	1	2	..
St. Olaf.....	..	2	..
Swarthmore.....	..	3	..
State University of Iowa.....	*	*	*
Tufts.....	..	3	..
University of Arkansas.....	..	3	..
University of California.....	*	*	..
University of Colorado.....	..	2	..
University of Denver.....	1	1	1
University of Minnesota.....	..	3	..
University of Nebraska.....	3	..	..
University of Oregon.....	..	3	..
University of Rochester.....	..	2	..
University of Southern Cal.....	..	1	..
University of South Dakota.....	..	2	2
Washburn.....	*	*	*
Washington and Lee.....	..	2	..

the rule that those who make the debating team have their work count on the regular course, and likewise the State University of Iowa specifies that credits in debate and oratory and dramatics are only in connection with regular courses.

Twenty colleges (19%), chiefly small colleges, give credit for editing the college newspaper—an average of two or three credits, usually only for the editor-in-chief. In addition, the

TABLE IV. JOURNALISM  
(A STAR INDICATES THAT SOME CREDIT IS GIVEN.)

Institution	Newspaper	Magazine	Other
Albion.....	4	..	..
Allegheny.....	4	..	..
Clark.....	3	3	..
Coe.....	1	..	..
Colgate.....	4	..	..
Colorado College.....	..	2	..
Dickinson.....	1	..	..
Drury.....	4	..	..
Hamline.....	2	2	..
Kenyon.....	3	..	*
Leland Stanford Junior.....	..	..	*
Macalester.....	4	..	..
Ohio.....	3	..	*
State University of Iowa.....	*	..	..
Tufts.....	3	..	..
University of Denver.....	2	..	..
University of North Dakota.....	2	..	..
University of Southern California.....	2	..	..
University of South Dakota.....	3	..	..
Washburn.....	*	..	..
Western Reserve.....	*	..	..
West Virginia.....	3	..	..

University of Cincinnati reports 'some question of granting two credits this year.'

Only four colleges give credit, and that a small one, for the editor-in-chief of the college magazine.

The Division of Journalism at Leland Stanford Junior publishes a weekly newspaper—not a college paper—as part of the regular work, certainly an interesting experiment.

#### GENERAL SUMMARY

All of our colleges, with the exception of Holy Cross, Union and the University of Virginia, grant more or less credit in the so-called extracurricular pursuits listed. 85% of the colleges offer courses in the gymnasium—required work in nearly every case. Three-fourths of our colleges grant credit in either music or art, usually both. One-fourth of our colleges grant credit for glee clubs, bands or other musical organizations. Likewise, one-fourth of our colleges grant some form of credit for football or other athletics. One-third give credit for public speaking outside the classroom, and one-fifth for journalism outside the classroom.

On the basis of custom, then, students should be required to take at least a year of gymnasium work, and they should be

permitted to elect a variety of theoretical and historical courses in music and art, but their laboratory work in these subjects should not exceed twelve semester hours. So far the majority agree.

Certainly every college student should be required to have physical training, preceded by a physical examination and supplemented by lectures in hygiene. Not 86% but 100% should be the rule. Why colleges of the standing of Williams, Yale and Harvard have neglected this requirement it is difficult to understand, except on the basis of tradition. I daresay it is tradition that has caused the old universities of England to be equally negligent. A friend of mine, a Rhodes scholar, rowed on a college crew at Oxford, without receiving any physical examination. Since then he has been rejected by enlistment board and draft board because of an "athletic heart." No American college would permit a man to row on its crew without first giving him a physical examination. Doubtless few of our colleges will go so far as the University of California in giving elementary and advanced courses in boxing and the like, with academic credit. On the other hand, no one has a right today to question the necessity of physical training for every student—if not as an art or a science, at least as a bodily need. The movement toward intramural sports fostered by Reed and other colleges and the setting-up exercises of military drill are steps toward the goal of universal physical training. Secretary Baker observes wisely, "The gospel of college athletics should be athletics for all."

As a rule, it would seem that football, baseball, basketball, track and other athletics should receive no college credit unless under the careful direction of a member of the faculty of the department of physical education. Under these circumstances, there would seem no objection to substituting that training, in season, for the class work in the gymnasium. It goes without saying that the director should be a college bred man and a gentleman. Obviously credit should never be given because a man wins a letter or a contest, but only for work of educational value, satisfactorily performed under faculty supervision.

Are music and art recreational pursuits? To some minds calculus is recreational. The modern pedagog is not adverse to having the student enjoy his subject. Music and art are incorporated in the curriculums of the majority of our best colleges. The problem here is of a peculiar nature: to find those exceptional instructors who have artistic or musical temperament of a high order and at the same time a pedagogical sense of system. There are courses in the history and

theory of art and music which fit readily into the college schedule, but it is more difficult, though by no means impossible, to assign academic values to work in the studio or at the piano. Every college of liberal arts should have some instruction in the history and theory of music and art. This is a response to the increasing esthetic need of our people. On the other hand, courses in practical music or art, when offered, are rightly under a rigorous supervision.

If one permits practical music in the college curriculum—and many of our most conservative colleges do—why not give credit to students in glee club, band or other musical organizations? To say that these students are picked because of their especial fitness is to beg the question, because many classes are so selected. To say that such activities are fun and not work is at best a half-truth, for rehearsals mean work. That it is pleasant work is not to the discredit of the subject. Moreover, a good musical organization promotes college spirit, and wherever it appears it advertises the college. For these reasons college authorities usually exercise some control over the director and the conduct of the organization. Nevertheless, the performances of the average college band, glee club or other organization, although diverting, do not merit academic grades. Under strict faculty supervision, however, the nature of their productions might be improved. As student organizations, selecting their own repertory and director, they deserve no college credit; but as a class under the control of a member of the faculty—which most of them are, in fact, today—they may some time merit full credit for a course in practical music. At the present stage of student activities, however, it is well that such credits are more honored in the breach than the observance.

The same observation seems applicable to college theatricals. Good plays, well presented under faculty supervision, have a distinctly educational value, in *savoir vivre* and *savoir faire*—traits which Americans need—as well as in esthetics, dramatic literature and public speaking. One is surprised that seventeen colleges give credit for band and only ten for dramatic performances, especially when one remembers the recent renaissance of good plays and good acting in colleges throughout the country. The artistic productions of the Cornell University Players, the Yale Players, the Delta Upsilon Society of Harvard, and the Bankside Players of the University of North Dakota have gained a national reputation. More and more the educational value of acting is being recognized, as evidenced by the recent erection of little theaters—the new experimental theater at Oberlin, for example, and the open air

theaters at Berkeley and the University of North Dakota. None of these colleges grant credits for plays outside of the classroom. The campus theater might well be considered a classroom. A large number of colleges give credit for plays rehearsed by students as a part of the classwork in public speaking. If these plays were afterwards to be presented before an audience, assuredly students would not be deprived of their grades for that reason.

Likewise, practically all colleges have courses in debate, for which credit is given. If it chances that the final debate, under the guidance of the best college instruction, is an inter-collegiate contest instead of a classroom exercise, it seems quite reasonable that the student should receive just credit therefor, not as a prize, but as an academic recognition of work thoroughly prepared under careful tutoring. One is surprised that so few of the larger institutions grant this credit. Certainly it has the sanction of good usage, if one happens to know the quality of the argumentation produced by Northwestern or Oberlin.

Oratory, we grant, was well nigh a lost art up to the time of the war, but certainly the reasoning in regard to other forms of public speaking is pertinent here. If a college grants credit for oratory in the classroom—practically all do—why should no credit be given for a better grade of oratory under the same faculty guidance, simply because that oratory is to be given the test which all oratory must have, an audience?

Again, journalism is now generally recognized as a legitimate and important academic subject. Classes, departments, even schools of journalism have been recently established. Practice should supplement theory, and unquestionably editing a college newspaper affords valuable experience. If this is conducted wholly as a student enterprise, with little or no faculty supervision, then no grade should be given for work performed; but if, on the other hand, it is made a practical supplement to the theoretical work of the classroom, it assuredly can be made a vital part of the curriculum. As Ohio State reports, "Our newspaper is the laboratory of the journalism department."

There are several advantages to be gained by a judicious granting of credit for editing a college newspaper. There are also some difficulties. Faculty supervision must not amount to a rigid censorship. The student editor must take the initiative, but the result, willy nilly, represents the institution. Therefore cooperation between student and instructor is mutually beneficial: the student is guided in a general way by putting academic theories into practice and the college is given

a better standing in the eyes of alumni and friends who read the student publication.

Because of the stress on the practical in modern education, the college magazine is apt to be inferior to the college newspaper. Perhaps the magazines would reach a higher standard both in literary style and in human interest, if they were made to supplement courses in composition or journalism. If that were done, it would be consistent for the college which grants credit to the editor of its newspaper to do the same for the editor of its magazine.

Should credit be granted, then, for journalism, public speaking, music, art, and gymnasium work? Few twentieth century educators would deny the worth of these as a part of the curriculum. But how is the line to be drawn between curricular and extracurricular—between physical training in the gymnasium and physical training under the same supervision on the athletic field; between the practice of music in the classroom and the practice of music under the same supervision in a glee club or a band; between debate, oratory and theatricals in the classroom and the same debate, oratory and theatricals before an audience; between journalism unprinted and journalism which is printed and read? Does anyone doubt that both the instructor and the student will do their best work under the stimulus of publicity? If an oration is to be given, a play acted, a song sung, should they not have an audience? If a newspaper article is to be written, should it not be read? By the very nature of these subjects, publicity is the final test.

Publicity is the key to the paradox. Because of the public honor accorded participants in these activities, college authorities have thought it unnecessary to give any other recognition. Hence, the anomalous position assumed by 65% of our colleges which give no credit for the strenuous preparation under faculty supervision for intercollegiate debates, whereas they grant full credit for an inferior grade of the same kind of debating in the classroom. True, grades are not prizes, to be awarded for winning a debate or a football match, nor, indeed, for winning a place on either team; but grades should be granted as the recognition of work of an educational value, satisfactorily performed under faculty supervision. Thorough faculty supervision is the final word. Debating, acting, writing, drawing, singing, exercising—these so called recreational pursuits which occupy a leading place in students' lives and which in many cases are now directed by faculty members, should be made of a distinctly education nature and given credit. The survey shows that music and art and physical

training are already so recognized and that all of the other activities are on the road to recognition.

This does not mean a lowering of the standards of scholarship, as some of our conservative institutions believe, but rather it reveals a broadening and strengthening of our conceptions of higher education. An analogy is found in the literary societies which flourished as the leading student organizations a generation ago. Gradually their functions have been absorbed by the present day curriculum, which includes literature, oratory and debate. As we have suggested, the preparation for the intercollegiate debate, oration, magazine essay or newspaper editorial is quite as important as the work done for the audience of the classroom.

Moreover, rightly or wrongly, the college is judged by these public activities. The college now lends its name to all of them, and, if it continues to countenance them, it must make them really worth while. Today the intercollegiate debater and orator are invariably coached by the Department of Public Speaking. It is only fair to the department as well as to the student to give credit for the work done. A college newspaper emanating from a Department of Journalism, while losing none of its spontaneity, might well gain in accuracy and scope of speech and idea. A play representing the Department of Public Speaking should be better selected and produced than one that is left to the caprice of a student committee. So with the selections and the performances of the glee club, band and other organizations which might well represent the Department of Music.

Should students receive credit for recreational pursuits? Not unless these pursuits are a part of the course of study, but the so-called extracurricular activities of today will be an integral part of the curriculum of tomorrow.

## REDIRECTING EDUCATION AND TEACHING IN A DEMOCRACY

By LINUS W. KLINE

New conditions growing out of the issues of the Great War have necessitated changes in the vast majority of human enterprises. The problems of education are no exception in the readjustment program. I submit here the results of a discussion in a committee meeting called to consider the changes and modifications that should be made in both the courses of study and in the internal activities of state normal schools. The presentation is made in somewhat categorical form for the sake of brevity.

1. In a democracy life finds its best expression in intelligent and willing service and in the enjoyment of impersonal pleasures. Education is essential to incline man to choose such a life freely. It is thought that literature, art, music, sociology as well as the social and administrative policies of schools may be made to contribute in a large way to such ends.

2. Free and hearty participation in the life of a democracy requires faith in the efficacy of personal effort.

The training of students should promote a practical faith, born of personal achievements, in the value of personal initiative and effort. Their work should be so planned and administered that they may see desires and purposes realized through painstaking, conscientious work rather than by the doubtful art of soliciting favors.

It is thought that liberal provisions for teaching the vocational subjects common to the communities in which the students live would tend to foster right attitudes toward personal achievement and good work. For example: X—and neighboring towns are largely commercial and her public schools are making larger provisions to prepare students to enter commercial occupations; this preparation begins in the Junior High Schools which will depend more and more upon normal schools for teachers. It follows that the local normal school should take practical cognizance of this need.

3. The ability to appreciate the merits of human endeavor and the genius to prefer human rather than material values promote an easier and more helpful participation in democratic life.

It is claimed that literature, the fine arts and the history of industrial, social and political struggles, when adequately taught, will stimulate and train the humane sympathies.

4. Those who would live whole heartedly in a democracy should be able to detect error and falsehood and to replace them with the truth.

Inhibited action arises from ignorance. Freedom of action is conditioned upon knowing the truth. To cultivate a love for truth and to enkindle a passion in young manhood to be right depend more upon the spirit and the manner of teaching and upon who teaches than upon that which is taught.

5. To take an acceptable part in our democratic life, however humble, requires a working knowledge of the inherent balances and connections between duties and obligations on the one hand and rights and privileges on the other.

A course in "Home and Neighborhood Morals and Manners" planned and taught by an able teacher of large faith and working ideals ought to be immensely valuable for pupils in Junior High Schools.

6. Loyalty and patriotism for our national institutions and ideals are not formed by fortuitous agencies. They are sentiments and not school subjects, and as such develop slowly by educational processes.

It is often urged that certain subjects are specially fitted to develop these sentiments and there is doubtless some truth in this view. But it is contended that these sentiments rest upon broader foundations than those afforded by the school subjects. And among these "other foundations" none are of more vital importance than the strength and quality of these sentiments as possessed by the teacher, the teacher of the school child.

The church does not tolerate a compromising, indifferent, negative or cynical attitude among her teachers. A democracy can less afford to suffer the teachers of her children to be lacking in these sentiments or to be negative toward them.

The reconstruction of normal school work should be so planned and administered as to insure positive sentiments of loyalty and patriotism in its graduates who will in turn cultivate them in their pupils through the influence of character and by an appropriate use of song, poetry, literature, history, and of biography.

7. Democracy requires that teachers and school officers shall inspire, aid and guide young life to a self revelation of its powers and aptitudes.

The historical pedagogue and the democratic spirit have not gibed well. The term 'school master' in education like

that of 'His Majesty' in government is not merely awkward but a bit embarrassing and although neither are any longer used literally the new age prefers less autocratic terms.

Some of the spirit of the autocratic school master has descended to the administrative machinery of education. Administrative technique is too much with us; it more often *bulls* than serves the school room. Like the former school master it conceives its function to consist of setting up controls, checks, limitation and inhibitions as if pupil and teacher were a federal post office or a department store. If the administrative functions *must* be "businesslike," its activities should be limited to dealing with things, with inorganic matter as fuel, supplies, etc. But if it *must* exert an influence, be a power in school affairs, let it attempt the more difficult and delicate, yet far better, role of duly encouraging and inspiring teacher and student.

The teacher who would inspire, guide and aid students in self revelation has an inexhaustible field of means in both the expressive and cooperative forms of school work.

8. The fear is expressed that educational reconstruction, socalled, will extend too far. This is a misplaced fear and on the contrary we should fear that too little will be done. This judgment is based upon the fact that the policies of state and public schools are conservative, that the work of secondary schools as a rule falls short of the public needs. Besides, faculties and boards of education are prone to balance the pros and cons in discussing school problems to such a fine equilibrium that action appears unnecessary.

## PRACTICAL APPLICATIONS OF PSYCHOLOGY AS DEVELOPED BY THE WAR<sup>1</sup>

By G. STANLEY HALL

It looks today as if the Peace Conference in Paris was to be only an interlude between two great wars; the second war, which we hope will not be with material weapons, being that between Capital and Labor, the Classes and the Masses, Culture and Bolshevism. Soldiers leaving the army make common cause with the workmen, and a propaganda of bolshevism is fast becoming more insidious and effective than that of the German cause ever was. Strikes and even crimes against property and person show a new kurophobia or horror of the authority and control so essential for ordered industrial and social life, and behind the political peace striven for by the delegates of the great powers loom the far vaster problems of industrial peace, without which all treaties will be temporary and ineffective. Agriculture, manufacture, trade, and commerce absorb today nine-tenths of all the energy of the world. They control most of the talent, muscle, interest, and human energy. Their interests dominate politics and statecraft, which are now little more than business agencies; while economic efficiency tends to impose its ideals, standards, and its fashions and spirits upon even all the culture institutions of society. The extreme proletariat the world over now tends to see red, and we mark on all hands elements that, if they had power, would repeat over all the western world a reign of terror like that of the French Revolution. There is a growing number who feel even toward the middle class bourgeoisie much of the same rancor that the bomb-throwing anarchist feels toward the millionaire. So prominent are these tendencies becoming today that it already looks as if the nations that would succeed in the impending competitive struggle for industrial leadership would be not those that have most capital or most raw material, or the largest number of workmen, the most trade or the most transportation facilities, but the nations that could most successfully cope with the growing industrial unrest and find the best antidote for the subtle and infectious bacillus of bol-

<sup>1</sup> An address given at the Fifth Annual Convention of the Vocational Education Association of the Middle West, Chicago, January 17, 1919.

shevism, for until its spirit is quelled or else enlightened or converted to better ways the world will never see true peace again. For real ultimate peace the new "red peril" is a greater and more formidable danger than German militarism, of which this is the Nemesis, ever was.

In this impending crisis where shall we look for guidance? I fear not to politicians or lawmakers, for they have in the past accomplished but little and have shown little true initiative. Capitalists, too, as a class have done little to placate labor, save under duress. Economists and sociologists have dreamed many dreams and woven alluring theories, but some of them have capitulated to labor and few have won even a respectful hearing from the great captains of industry. So they are hardly in a position to be peacemakers. Industrial educators have nibbled at the fringes of the problem and accomplished here and there results of local and temporary importance, but both their visions and their sympathies are too restricted. Religious leaders often warm our hearts by their good intentions, but the heat they engender is not enough to melt and recast the old prejudices, customs, and interests that constitute what is too often the devil of things as they are.

In view of all these facts of the present situation my conclusion is that the first step for those who wish to volunteer as soldiers in this stupendous war that impends for true peace is to look over the past and present and make an inventory of all the successful partial solutions that can be found, and thus not only to hearten ourselves and draw inferences from each but try to synthetize and apply these lessons to the larger tasks of the future. Out of these cases, if we can do so at all, we can construct a program that will inspire confidence enough to make us work for it.

If this view be sound, the chief burden of responsibility just at this juncture rests with the philosophical observer, who is not too near to details to lose perspective and not too far from them so that the essentials of any will be lost, and who is not predominantly interested in any one or more partial solutions.

Our task, thus, is nothing less than to rehumanize industry, to break down the disastrous partition that has grown up between brain-work and hand-work, to appeal at every step to mind lest we add to the degradation of labor, remembering that the brain in its evolution was hand-made and that in all progressive periods of the past the two have always gone and grown together. We must find a way of putting not merely head and intelligence but heart into work, as also was the case of yore. We must search everywhere for the

culture elements, which are inherent in every industry and even in every process, and which it is the tragedy of modern industrialism to have lost. Work has made and it alone can perfect man; hence we must attempt to restore or else create a morale in every great branch of industry. All this stupendous task I believe can be wrought out, because nearly every item of it has been accomplished somewhere and at some time.

There is a very pregnant sense in which the war is not ended but only transferred to other fields to be carried on by other agents. Those of us who have not smelled powder must now come forward and take up the battle which is waged against conservatism and inertia, by which things tend to slip back into the same old ruts as before if we do not mobilize and use all the unprecedented opportunities and incentives to reform to make the educational, industrial, social, political and religious world fitter to live in; for otherwise we break faith with the millions who have died. Our foes are timidity and laziness in this new spiritual conflict to which the battle of arms has bequeathed its precious legacy. To say that reforms are now needed, though hard and dangerous, is true, but to leave them unattacked is a slackerdom unworthy of the spirit of our armies in France. The new struggles we ought to enter upon are the harvest of victory, and are harder and will take far longer than war itself. Let us, then, glance at a few things that have been done.

(1) Some years after our Civil War closed, when carpet-baggers from the North had overrun the South and the Negroes had learned to abominate work as suggestive of their former condition of slavery, when the antagonism between the whites and blacks was represented by the klu-klux and other clans, when class and race animosities were at their very height and harmony between them seemed impossible, Booker Washington conceived and found a way out. He taught his race to waive in many cases the political privileges they so prized of suffrage and inspired them with the idea of working now not for their master's advantage but for themselves. It was a slow, hard task that for a long time seemed impossible of accomplishment. The Negro had forgotten many of the crafts that he knew in the old days, and these had to be relearned and many others added thereto. Much of the most bitter opposition to his work came from his own race, but those who were really reached by his influence were transformed, the white sympathy and support were enlisted and a great peace supervened, and in the very district where the rancor was most bitter the harmony is now most

complete. The antagonism today between Capital and Labor can be nowhere greater or more widely spread than was this antagonism, so that here we may draw an inspiring lesson of hope, and we may also find not a few methods that will be of service in the great new harmony that we must now strive for between the newly enfranchised and emancipated forces of labor throughout the world and its leaders and employers.

(2) Another inspiring instance is found in the work of rehabilitation that has been done with the maimed and wounded soldiers. Many of them felt that they had done their "bit" toward saving the world from autocracy, for they had been praised by men and admired by women as heroes, and that this, especially in connection with their infirmities, exempted them more or less from the necessity of earning for themselves or their families; and some of them felt that they must be pensioned, supported, and served for the rest of their life. The task of the social worker and persuader was here as tedious as that of the psychoanalytic doctor. They had to be converted to a new view of life and of their own functions in the world. Hence inspirers were brought, men who had themselves suffered severe bodily injuries but had overcome them. Handless, footless, legless men were inspired to see that they could again find place in the industrial system and were given new heart and courage to accept the situation, and in the most successful of these institutions they have competed with each other and achieved marvels of efficiency despite all their handicaps. Just as Booker Washington accomplished with the white or ruling class almost as great a work as he did with his own people, so for the disabled soldier a great many employers have been induced to make concessions, some of which will doubtless be permanent, in favor of these cripples. Thus again we have a radical change of attitude toward labor that in the last cases has almost amounted to a conversion.

(3) Miscellaneous Reforms. Who would have thought before the war that the great prohibition wave could have swept the country and become national. The liquor interests were rich, powerful, strongly entrenched, and moreover there has been a deep feeling even among the temperance men that sumptuary laws constituted an infringement of personal liberty. And yet, in spite of all this, the country is going dry, and enthusiastic advocates of the cause are beginning to dream of extending the movement throughout the civilized world.

The same is true of woman's suffrage. In this country

and throughout Europe women have come to the fore in industrial, social, and even political ways to a degree that the most ardent feminists hardly dared to hope at the outbreak of the war. We need the woman's view, perhaps not so much in politics as in social and industrial life, and woman's more humane and personal attitude toward problems of reform will make many things possible that were not so before.

Perhaps we might place in the same category the striking reforms that were effected in the matter of the social evil in some if not most of our training camps.

So, too, the control of railroads and other great public corporations by the government, whether it is permanent or transient, has opened a way before an equilibrium is restored for many reforms, and everywhere the war and its exigencies have made for plasticity and open-mindedness.

Even in the matter of religion we are coming to realize the need of reconstruction and especially of going back to the first principles of loyalty, self-subordination, obedience, sacrifice and other virtues of the trenches, which are psychologically the basis of the religious life.

(4) This brings me to the purpose in which this association is now especially concerned. The efficiency of war in this country has been incalculably increased by what might be called the vocational guidance work that has been done by scores of expert psychologists. No great enterprise has ever profited so much by placing the right man in the right place, and America's war work here will long be not only an object lesson but an inspiration for the application of the same principles of fitting every man to his job in all the great lines of business. To understand this, which is my chief theme, we must pause and take a wider view.

Individual psychology has had a long and hard travail. Christianity stressed the infinite worth of individuality but it was for the next world, and it did little to ameliorate conditions in this save only to cultivate the virtue of charity. The school, industry, army management and politics were based on averages that eliminate individual differences. But now medicine is beginning to recognize the fact that every case presents new problems that transcend textbooks in pathology, while psychoanalysis spends weeks and months upon a single case. Thanks to Binet, Simon, and Lombroso we grade feeble-mindedness and differentiate criminals, and in the study of normals differential psychology is everywhere in order.

I. Of all the people on earth, past and present, no two are

alike even in their finger-prints, of which there are forty types, while psychic are far greater than somatic differences. There is no trait in which men do not differ, even at birth, and these differences increase with every year of development. In any large group, according to Thorndike's estimate, some children are four to six times as capable as others, even those with similar opportunity and social environment. Especially when we correlate traits we find as many types as there are individuals. The psychology of qualities common to all, which we have chiefly taught hitherto, though very fundamental is very limited when compared with the new differential domain now opening before us. These differences are both inherited and acquired, although these are often hard to distinguish and it is still harder to tell which predominate.

II. In evaluating and utilizing skills acquired in peace for war activities the army psychologists, Scott, Bingham<sup>2</sup> and others, have given us a valuable and most inspiring example: "Under the urgent necessity of creating and organizing an army in the shortest possible time every scrap of training and experience that was needed by the army was a national asset." Thus for each a qualification card or index of fitness was made out by the personnel officers that showed "just what kind of men in terms of civilian experience will learn the special duties" of the army in the shortest time. Oral, picture, and performance tests were carefully worked out that graded each kind of skill. For those only partially fit physically four classes of limited service have been established, which were more and more drawn on, and development battalions have been created. On such data men are selected not only for special tasks but for promotion, while the final rating scale takes account not only of physical and intellectual abilities but also of leadership, many personal qualities, and finally of general fitness for the service.

III. Of all psychic qualities we have the best tests for intelligence. In addition to the ninety which have grown from the original fifty-four French tests for psychological age we now have many series, besides three specially devised for the army, on the basis of which intelligence scales can be built. Here standardization is a prime requisite for without it there can be no comparisons, and these are essential for any science. A real standard is of universal application for it is objective and unaffected by opinion, likes, dislikes, or even race. It is more or less outside and independent of school work. Terman well compares these findings with ores or soils dug up at different but carefully selected points and sent to an assayer

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<sup>2</sup> Personnelle: Vol. I, No. 1, August 21, 1918.

or soil analyzer that he may evaluate them for the miner or the farmer. It is not easy to set up really typical tests, and the results of each must have a high significance in itself, well understood beforehand by the expert, and it must also have if possible a high correlation value suggesting the presence or absence of other powers or deficiencies.

Rightly used this method takes us not only far beyond all pseudo-methods, such as palmistry or phrenology, but beyond the off-hand judgments of the best connoisseurs of human nature and beyond the slow method of natural sifting by experience. For higher grades of intelligence we have also the method of average estimates of those who know the individual best.

Now the real value of even the best tests will not be finally determined until we have an authentic exposition of just what each tests and what its findings mean and imply. It is not easy to select true samples of every kind of intelligence. Not only perception and observation, but memory, association, imagination, reason, information, experience, judgments, originality, and even vocabularies,—each represent vast and complicated functions and are indefinitely varied among individuals. Nevertheless we have made a splendid beginning, at least, toward calibrating the ranges of intelligence for the army, and a great future opens here if we can avoid the danger, just now I think a little ominous, of a sense of finality and overestimation of the value of methods thus far developed.

IV. But intelligence, however broadly defined, is only a part, and we have but just begun to differentiate for practical uses what is comprised in the more basal domains of character diathesis and morale. We know less of the will than of the intellect, and far less yet about the vast domain of feeling or affectivity.

From the old doctrine of temperaments now significantly revived to the present we have a vast diversity of conclusions among experts save only a very general consensus that there is a fundamental difference between centripetal and centrifugal characters (Jung's intro verus extroversive; James' tough versus tender; Ostwald's classic versus romantic; Nietzsche's Apollonian and Dionysian; Frink's passive and active, knowers and doers; perhaps Geddes' shepherd and hunter type; Goldthwait and Bryant's herbivorous and carnivorous; while Davenport in his quest for unit characters suggests hundreds of possible traits that may be independently variable and also heritable). Far more practical, though not often occurring in pure form and therefore not always easy to distinguish, are

the four somatic types of MacAuliffe and other French anthropologists. According to this group of investigators there are four chief types of man, as follows:

(1) The first is the abdominal. The head suggests a truncated pyramid, smallest at the top and broadest in the level of the jaw. The neck is large and short, the stomach is large in circumference and also tends to encroach upon the thorax, and the umbilicus is high. Men of this class have peculiar liabilities to certain diseases and peculiar power to resist others. In some respects they resemble the ancient phlegmatics. They are very dependent upon food and drink for their efficiency; the meals must be regular and abundant for their digestive powers seem to condition all other functions. In war they are best for defence, not only because their inertia makes retreat physically and temperamentally hard but because they fight best for stores. They can endure great hardship and fatigue, provided only their rations are not scanty or defective.

(2) The second is the respiratory type. Here the head is broadest in the middle regions, at the level of the ear and the nose, and tends usually to taper both upward and downward from this plane. The lung capacity and chest expansions are highly developed. The body is usually long in comparison with the limbs, like the preceding type, but the umbilicus is low for the thorax encroaches upon the abdomen. Men of this type are active, venturesome, bold. As the abdominals do best in the trenches, these men are often best in skirmish fighting, and outpost work above ground and especially in the mountains, and they make the best aviators. They are exquisitely dependent upon aerial conditions; they need an abundance of pure air, suffer where it is foul as in the trenches, can go without food, and have great power generally. They are in the closest kind of *rapport* with atmospheric conditions.

(3) The third is the muscular type. Here the head tends to be cubical. The neck and limbs are long and powerful, and the trunk makes up a less proportion of the body length than in the preceding types. Neither the thorax nor the abdomen predominates, but this is a muscular type which has to have a great deal of exercise and thrives under hard physical work. In the army these men are best in heavy labor, such as trench-digging. They are quite versatile but cannot stand inaction. It is hardest for them to remain days immobile in the trenches, for their morale depends upon abundant activity of the muscles.

(4) The fourth or cerebral type has a head largest at the top and smallest at the jaw, the inverse of the abdominal. The

build is rather slight, with no special predominance of any other portion of the body, as in the preceding type. But this type, sometimes called the "adrenalin type," has extraordinary power to draw upon its reserves. It can stand long, extra stresses, and very often when the other types are exhausted, as in very arduous campaigns, these men go on. They respond to the call to go "over the top" when a regiment is "all in"; but when they are at the end of their large store of energy they are prone to collapse. This erethic, inflammable type is thus best in emergencies, in aggression, and where staying power is called upon.

Of course very few individuals are pure types, but medicine, as well as industry and war, becomes far more efficient if regimen or work is prescribed according to the predominance of one or the other of these types, which of course slightly suggest the old four in the above order, phlegmatic, sanguine, bilious, and nervous.

The distinctions which it is claimed are of great service not only in medicine but in the army are of types that their advocates hold to be even more significant than race itself. In this field we have two noteworthy beginnings which might have been developed to be of great service in the army had the war continued. The first is that perhaps best represented by MacCurdy's study of shell shock cases, which seems to show a positive correlation between night terrors and fears in the dark in children and general panic-starters in war; between abnormal dread of thunder storms and of shell fire; between dread of tunnels and bad air or premature burial and horror in the trenches; between abnormal fear of blood on the one hand, and of disposition toward cruelty to animals on the other, to military functioning; between sensitiveness and lack of adaptability in changing from vocations of peace to those of war.

(b) Woodworth has undertaken to collect and interpret personal data, with a view to determining serviceability in war, concerning previous experiences with dreams, nightmare, falling, blushing, disposition to fatigue, dizziness, headache, fainting, loss of memory, solitude or shyness, quarrelsome ness, attitude toward crowds, responsibility, dread of high places and fire, biting finger nails, bed-wetting (see Adler's enuresis), suicide, drink, and many other traits.

(c) The hardest and highest problem of war psychology attacked is army morale for this is the soul of an army,—without which it would be a mob,—which some military writers rate of even more importance than equipment, ammunition, etc., and which nearly all rate second only to these.

Nearly two years ago the soldier-psychologist, Brigadier-General Munson, drew up a plan which he was able to put in practice at Camp Greenleaf, according to which each recruit was given much personal care, his home relations were kept tonic, he was given better food and more diversified entertainment, etc., for the first fortnight, while Lord and Hocking and Eltinge have given us valuable books about it. This rough outline does but scant justice to what these scores of psychologists, who left their academic work, have been able to do for the vocation of war. It is a supreme and inspiring achievement to vocationalists as we revert to the already well-advanced work of vocationalizing business. Even the Corporation School movement has now fully realized that the prime factor in efficiency in industry is not capital or stock but labor, that the most economic of all changes now confronting the ever more differentiated lines of business is to get the right man in the right place, that even improvements in machinery are not so much needed today as are improvements in labor and its conditions, so that the aptitudes and skills of each worker are utilized, and the morale not only of each great line of industry but of every great firm should be developed and kept at its highest point. This is the lesson, too, of the Arts and Crafts movement, as well as of the great Guilds of the Middle Ages that inspired it, and is already well illustrated in a few great American plants.

In this moment of transition between the unprecedented achievements of creating in two years and equipping an army of four million men, training and transporting one-half of them three thousand miles and conquering the greatest military power on earth, a thing that makes even our own great industrial achievements before seem a little pale and ineffective, and the great business revival that seems to be just at hand, what are our prime duties? I answer:

(1) To take a broader view of our problems in general, to realize the unique opportunities of the hour, and to feel our very grave responsibility. Our training for vocationalists is not yet broad or long enough. However scientific industry may become it must not tend to *kultur* to the neglect of *culture*. It was a joy to learn of one thousand members of our American Society of Engineers applauding to the echo the address of their President Hollis, urging them not to forget that spiritual must dominate material agencies in their work lest the latter become a Frankenstein. Humanism in our material day and land is not assured or even helped by a little Latin, nor even art or literature, but we must chiefly *develop it right out of the heart of each of the chief occupations themselves*. The

stories of its processes and inventions, the sources of its material, the destiny of its products, its role in modern civilization for the individual and the country,—this is a new old culture element which can give each intelligent workman in the world today a new sense of wide relations and of essential service to mankind. As an aid for teaching this we already have a choice little but as yet almost unknown literature which could and should be gathered and increased, for a little training here goes far toward the correcting of the growing discontent which goes with specialization of labor. A few leaders are already beginning to awake to the possibilities in this direction.

(2) And more specifically. The schools lavish time and labor in keeping up their system of marks, teachers sometimes grading every pupil every day in every subject. This work should be cut down and in its place there should be slowly developed a system of general rating of each pupil, with reference not only to success in studies but to health, with a few physical data; mental aptitudes, tastes, and abilities; skills; achievements outside of school and salient traits generally. In Aix-la-Chapelle many years ago a scheme was developed by which every child came to school in its best clothes two or three times a year and wrote out all its lessons for permanent preservation, so that a glance through the book was a truer index of the progress the child had made than any examination could possibly be. In this same "Life and Health Book" the parents, if intelligent, recorded frankly and confidentially their impressions and important facts of the child's life, as suggested by a brief questionnaire. The family and the school doctor both made their own entries, and the teacher and sometimes the pastor added their comments. These books were preserved in the City Hall unless the subject fulfilled certain conditions, while under others intending employers could look them over.

Thus such a scheme would at least give the child on leaving school and seeking employment some of the self-knowledge and self-rating which all so intensely and half-consciously seek, and would at any rate give first-aid to each in becoming his own vocational guide, for much as we may help the very best we can do is to enable each to know and to guide himself. Right self-evaluation and self-direction are the consummate flower of the democracy which we are now triumphantly leading the world into.

In the mass, lockstep methods of the school nearly everything is necessarily addressed to the average child. We have studied and differentiated and are segregating morons in

classes apart, but the superior child is still generally undetected and almost never given the special help he needs to prevent striking a slow pace for life. Vocationalists, then, have a boundless task before the problems of developing and bringing out the individuality on which success in life depends, for differentiation of schools and even courses is not enough but is only the beginning. The inertia of leaders of industry in this country today is not nearly so great as was that of the army at first to any kind of personnel work and especially to tests. Thus we have every reason for courage, even though we cannot forget that our task is no less than that of fitting each to fill the place best suited to him in the industrial system.

(3) The call of industry to the psychological vocationalist was never so loud and clear as it is today, and it is sure to increase. The war testers are most wanted, even at alluring salaries, by great concerns, where their aid is sought in calibrating workmen and assigning them to the different departments, in advertising, in shortening and economically reconstructing traditional processes, à la Taylor, Galbraith, etc., and even the social worker and recreationist is wanted, for employers are realizing the great and growing menace of I. W. W. and bolshevism. Schools within corporations themselves are one of the most genial and original creations of education in this country, while the influences of the Gary system are perhaps even more effective just now in opening men's eyes to great possibilities in this direction than in the good things they have actually accomplished.

Despite all that has been done of late our educational institutions are not only still far from being able to supply the experts wanted to guide youth in making each type of industrial decision he must make before he settles but in helping industries themselves. Economics, sociology, psychology, pedagogy are not yet able to do all that is required in this great epoch of recognition of the supreme value of the human element. What we have to do sooner or later is to go into the shops, factories, stores, offices of big business, of transportation, banks, accounting, and all the rest and, if we are really to undertake the great work of humanizing industry and industrializing man, to try to turn the present curse of labor into a blessing and to make it not abhorred but loved as the chief instrument of human development in the modern world, to make men put pride of creating and conscience in place of shame and shirking, and to inspire even the most specialized workman with a larger view of the whole so that each cog begins to feel itself an essential part of the vast machine. Nothing less than this

is the responsibility now laid upon the vocationalist, and this means a long period of high specialization of our own labor, kept liberal by the keenest interest in every item, e. g., of a wide-ranged and well-balanced program like that of this meeting.

(4) Sooner or later vocationalists must inventory all the great lines of business with the utmost care and detail, a work that has already been most hopefully begun, in order to find out not only just what human qualities are needed by employees in various departments but also to find out the culture elements that are possible for each, to make them attractive and develop them. There should be a brief history of the industry and of its great achievements; the geographical distribution of its interests, its magnitude, importance, vicissitudes, and every process from the crudest raw material to the finished product marketed and in use should be set forth. An example of this I myself attempted to suggest many years ago were the desideratum of books on the leading trades, e. g. a *Shoe Book, etc., was described*.<sup>3</sup>

(5) We must also be alert and keep an open mind to rightly evaluate every new project, such as the Bureau of Educational Experiments is founded to consider. The very clever scheme of Caroline Pratt<sup>4</sup> is worthy of attention. Finding the toy industry in America far behind the needs of children or what it is in the leading European countries, she proposes an educational, model industrial school to make carefully chosen toys, and not only that but an agency to market them, such that every child shall in two years pass through the entire course from the place of origin for the material to the market and use of the toy. This might be supplemented, as the business developed, by making simple scientific apparatus which would have a peculiar educational value of its own. It is not at all impossible that the school will have to take this vast material of industrial education out of the hands of capitalists and out of the reach of trades unions, and present the world with finished model institutions which are at the same time cultural and economically self-supporting, as indeed another famous institution that has been in operation for a quarter of a century in France, viz: the *École des Livres*, set out to do.

A German physiologist, Nicolai, who has written what many think the best of all the war books to date, estimates that every individual of the one and one-half billion now on earth commands today on the average, owing to discoveries

<sup>3</sup> See my *Educational Problems*, 1911. Vol. I, p. 624.

<sup>4</sup> Helen Marot: "Creative Impulse in Industry," 1918. p. 116.

and inventions, about eight times the amount of the energy of Nature that was possible one hundred years ago, and concludes that our chief problem is now how to use this prodigious increase in power aright for weal and not woe, for bringing man to an ever more complete maturity and not for his arrest or, still less, his destruction. My answer would be that we are now called on to develop eight-fold the moral energy we had a century ago. Thus alone can the world be trusted with this ever-growing new power at its command. We have not but must now attend to this if scientific advancement is to be made a blessing and insured against being made a curse to man.

What is the true moral equivalent of war? Of the half-dozen suggested I answer, in view of all these facts, that it is to do battle against the unknown; against man's chief enemy, Ignorance; to carry on the warfare of science till it controls the world; to discover, invent, apply; for compared with this age-long struggle of man to master Nature even this colossal warfare is but an alley brawl. Thus as peace supervenes we ought to feel a new call to arms.

## THE VIEW-POINT OF THE PSYCHOLOGIST AS TO COURSES OF STUDY WHICH WILL MEET THE FUTURE DEMANDS OF A DEMOCRACY<sup>1</sup>

By G. STANLEY HALL

As we turn from the arduous and transforming work of the world war to face the new era of world reconstruction, we must first of all realize that it is our thrice-blessed privilege to live, and also our awful responsibility to act in the greatest crisis of all history. The waters are stirred as by the Holy Spirit; old rigidities are plastic; opportunities for reform of which we have hardly dared to dream are at this moment wide open, and radical transformations have already begun. We educators charged with molding the souls of the rising generation must listen intently and reverently to the clear call of the eight million slain in this war that their supreme sacrifice be not in vain. To let the world slip back into the old ruts as it was before would be treason to them and to all who have borne arms in this struggle in any sense, material or spiritual.

Man has tried to domesticate some six-score species of animals. With some he has succeeded, and they have grown tame, large, and have multiplied. Other species could not adapt themselves to the conditions man imposed and so either died out or relapsed into the wild state, as they were before. What we call civilization is the sum of man's efforts to domesticate himself, and under its influence many tribes have developed into great nations which have perished or else reverted to the old feral state of war; in either case just in proportion as the customs and institutions he imposed upon himself failed to fit his nature and his needs. This shows us not, as pessimists infer, that culture and civilization are themselves a disease but that beyond all peradventure we must now go back to first principles and look again at human nature as it is *per se*, and readjust the social, political, industrial, and cultural environment to man as he is. So in education we must now see to it that we have gone the limit in fitting the school to the child and made our system *paidocentric* instead of *scholiocentric*, that this Co-

<sup>1</sup> Read at the Fifty-fourth Convocation of The University of the State of New York, Albany, December 12, 1918.

pernican revolution is complete, and that evocation and transformation cast out repression.

Again, we have taught the world that the voice of the people is the voice not of autocrats or kaisers but is the only authentic voice of God on earth, so that a true democracy must always tend to be more or less of a theocracy. Hence to make democracy not only safe but triumphant throughout the world it must be extended to children, and the interests and aspirations of Youth must be our Muse. We must reedit our curriculum and refit it; we must discriminate anew between the essential and the unessential pedagogical industries, rehumanize the so-called "humanities," and work out a higher synthesis of the new enthusiasm for humanity, which is stirred anew by the war to its very deepest roots—and the deepest roots of humanism are always psychologically considered religious. We must also incorporate in the school the best of the new spirit of discipline, taught us so effectively during our eighteen months of active warfare.

The speed with which millions of our peace-bred youth were transformed into a victorious army suggests that we educators have not been in earnest in our work, that we have underestimated the capacities of our young people. We see now also that our military achievements have been no whit less in morale and discipline than in material equipment. So in the school we should realize that we have been inefficient and have worked far below our possibilities and those of childhood; that, if really put to it, average American children can without harm or scathe accomplish far more than our present standards require toward attaining the goal of humanistic culture, as symbolized by the classics, and also the goal of vocational and specialized equipment.

Youth is the time above all other periods when we must appeal to the higher powers of man; there must be intensification of interest and effort, an intellectual second breath, afflatus, or erethism, if only as the most effective of all safeguards against the one chief sin to which youth is prone. Their chief need is inspiration. To this end the liberal and the professional goals, while they interpenetrate and should not be kept very distinct in practice, should always be present, and, as Lotze and Bergson tell us of the mechanical and spiritual, neither should be subordinated to the other.

The first premise is that the more democracy advances the more we must appeal to the interests of school children and youth, and the less we can rely upon authority and prescription. Even discipline, some forms and degrees of which are indispensable, must be more or less self-imposed, and there-

fore it will come far easier in vocational than in cultural branches, where interest must still more be our guide. From this it follows that the factitious stimuli of examinations will be less and less effective as the demand increases that every child and youth should be in every subject in that grade of a great system in which he can get most good, rather than in that for which he has served an apprenticeship of a prescribed number of hours or years. The ways of getting into institutions, grades, classes, and subjects should be made easier, and only the exits with honor made hard.

Now to illustrate these principles let me try to roughly tab off for a few sample topics the new or now greatly reinforced changes needed to meet the future demands of democracy..

I. First and foremost, in every school system we must henceforth consider *health*, which means wholeness if not holiness. What shall it profit a child if he gain a whole world of knowledge and lose his own health, or what shall he give in exchange for health? We have made great progress in recent years in school hygiene and in enlisting the work of muscles, which are the organs of the will and nearly half the body weight. But the school must share some of the responsibility for the *circa* forty per cent of drafted youths physically unfit for military service. We should certainly very carefully consider with a view to permanent incorporation of its best features the various experiments of military or pre-military training, led in this country by Wyoming and by the state of New York. If we can only introduce with this a bit of the morale which is the soul of armies, and which Napoleon made even more important than equipment, and develop the spirit of loyalty, mutual help, patriotism and the spirit of companionship in arms, we can take a great step towards the realization of the Greek ideal that the best thing in physical training is the mental and moral discipline it gives. Prosperity in peace, no less than success in war, is impossible to weaklings, and I think we should study the effect of the experiment California is making with a new state director of physical culture and body-keeping.

II. *Physics* a generation ago was selected by the Committee of Ten as the entering wedge of science into our secondary schools. It immediately became the center of great activity by specialists who knew physics but did not know the nature of youth, with the result that physics was dehumanized, with mathematics unduly stressed, and standardized in hours and experiments, so that in less than twenty years a comprehensive census showed that barely 6% of high-school boys were tak-

ing it at all. Of course now, as we all know, the pendulum is swinging the other way, and it has become clear to the competent that we must utilize the cultural elements in the history of the science, with some reference to the lives of its great men, and we must also have frequent glances at the vast field of its modern applications, e. g. to autos, aeroplanes, submarines, ballistics, as well as to kites and tops, and some of the standardized lists of mechanical toys to illustrate its principles.

It is a psychological law that interest, like steam in an engine, has to be developed over a large surface before it can be applied effectively to a small one. Thus we must rescue physics in the high school from the antipedagogic, narrowing, and excluding methods imposed upon it by college texts, and let our youth see that it is the open sesame to many of the greatest achievements of man in his conquests of Nature, and not a set of puzzles. It is true that these guides have taken youth through a very rich country and along well-chosen routes, but it is as if these highways were sunken so that the landscape had been traversed with no conception of its interests but only with aversion. Interest at graduation is more important than knowledge. The new dispensation in the field of physics is typical of the changes needed wherever astronomy and geology are begun, and to some extent also in chemistry.

III. More and more think we made a mistake in not introducing *biology* into the high school as the type science instead of physics, but biology was then handicapped by the suspicion of teaching evolution, it was a far newer science, and its practicalities were less seen. It is *per se* more humanistic than physics, for it deals with life. It has already a notable list of great men, some of whom have been saints and martyrs to it, it conditions our vast industries of agriculture and forestry, it gives a scientific basis for both personal and social hygiene, and opens up vast vistas in its applications to men by way of eugenics. Indeed, it is *the* natural science that underlies anthropology, not to say sociology and humanity and all its works and ways; therefore if "a proper study of mankind is man", it should now have a unique preeminence.

But here again our current methods and texts, with their affectation of hypersystematization, have wrought their disenchantment by narrowing zoology to perhaps the story of the chick, or perhaps even beginning with things invisible to the naked eye and overstressing microscopic technic, or else have sought to be superficially comprehensive by loading their pages with descriptions and names of sample species

throughout the whole animal kingdom. Botany has suffered still more from this *morbus pedagogicus*. I can think of no greater intellectual need of our schools today than a new syllabus in this domain, which at every step shall select the points of chief *human* interest, to all of which the mind of youth is so keenly attuned.

C. F. Hodge ten years ago marked something of an epoch by bringing in in his "Nature Study and Life" for grammar grades the economic aspects of biology, connecting for the first time the great work of the Washington Bureau and the Agricultural College with the mind of the child, and he has just supplemented this by a high-school text. But now we want something more which shall link all the studies that deal with life in general with the life of man. Years ago Katharine Dopp in this country faintly glimpsed one of these vistas, and Frobenius in his "Aus den Flegeljahren der Menschheit" another. Has not the time now come when the fact that evolution arose in this field should no longer be a bar to the whole domain, as the vestiges of the old *odium theologicum* still make it; and is not the time at hand when the *odium sexicum* should no longer bar a sane and chaste teaching of the practical and certain results of eugenics, in which not only the nation but the race has such a vital concern, especially now when we must replace the losses of the war? The very controversies about many of the questions in this field have generated a vast body of interest which, now that the battle of controversy is won and the air is clear again, ought to be utilized for pedagogic ends, for which they are such a rich and precious asset.

Once more, children's interest in animals is almost as deep as their interest in man and children, but all these zests are relatively unutilized by the school. If there is any field where we need to go back to first principles and study human nature and human needs, and reorient and reconstruct our own selves, and also if there is any field where the true insightful pedagogue should be supreme and lay down the law to the biologist as to what ground he should cover and what subjects he should introduce in his course, it is here.

IV. The goal, proximate if not ultimate, of *history* teaching should be patriotism, and in this department the center of gravity of interest has certainly moved forward in time. Not that ancient history is less important, but at this epoch, when history is being made at a far faster rate than ever before and when we hope the world is swinging into a new course, the goal of all historical teaching should be the living present, and all courses that leave a gap of years between

their conclusion and today are hopelessly inadequate. It is the here and now that claim attention as never before, and the responsibilities of the citizen voter in the midst of the world-wide problems now open is incalculably greater than ever. In a day when old party cries are less potent and when our interests have been so suddenly given nation and even world-wide scope, education must realize the new responsibilities of making members of society on a larger pattern than ever before. There are new motives for teaching even European history as well as geography, and the emergence of this country from its isolation and the vital incorporation of its interests with those of the great nations of Europe bring problems that may well cause us to pause. The value of history today, as never before, is the light it sheds on the immediate future. We feel that the best history is just ahead and cannot yet be written.

The public has made enormous progress. How provincial and ignorant our press showed itself to be of all larger European problems at the outbreak of the war, and how it has advanced by leaps and bounds in this direction, so that we are now discussing a league of nations almost as intelligently as the states in the old days of the Revolution discussed their own union under our constitution. In this country, which might well be renamed "New Europe" for our population comes from every country there, we can never have true patriotism until we develop the interests of every newcomer in his own native land and do not suppress it but aim toward a consummate synthesis of all these nationalities, which shall be true Americanism.

V. As to *vocational guidance* and training, and technology we have of late made remarkable progress. England, as everyone knows, proposes four years of required continuation schools, and France, although she has so far made less definite provisions, is certain to follow suit; while Germany, as Friedel has shown, has gone still farther. It is obvious that our young people should be given the means of earning a livelihood for their own good as well as for the advancement of the country's industries. The Corporation School movement is already deserving of very special attention, and its new methods of efficiency will surely make themselves felt in the public schools. So many new departures in this country have already placed the schools in such contact with the life of the community, which is more and more flowing through them, that in recent years I have advised my graduate students of Education who, when they are through, want to take a year of travel and observation, to go not to Europe

but through this country. I make an itinerary for them of places in the United States to visit New York, Vineland, Chicago, Tuskegee, Gary, Cincinnati, Los Angeles and a couple of dozen more. We all know the Munich system of more than two score of apprentice schools in which every boy in as many trades must spend certain hours each week, without reduction of salary, in perfecting his knowledge and skill in his trade, and we shall eventually have many more. Even here the culture element should not be excluded, and the best professional spirit that Sloyd and the Arts and Crafts have transmitted to us, the latter straight from the old guilds of the Middle Ages, should be very carefully conserved. Each vocation rightly interpreted opens up a vista into the social and cultural world, and can be given an almost professional dignity. Our industrial system, of course, needs no end of transformation, and can perfect itself only when the old antagonisms between capital and labor are removed, and Heaven knows what the new democracy, so easily infected by vicious bolshevism, will lead us to in these directions. But here economists and publicists are giving us new visions, some of which will doubtless become practical. Each business needs, and some are beginning to acquire, a new morale of its own.

VI. *Literature* must take precedence over language study and philology. We must read more in both the ancient and modern texts, even if we introduce the use of ponies or translations, and have more reference to content than form, because with the former given the latter comes best as a by-product. The dominance of grammar and of notes must abate, and if we study classics we must use every possible means of entering into the spirit of the ancient Greeks and Latins and make their life live again in us, with a far more copious use than hitherto of charts, maps, diagrams, and illustrative apparatus in which, as our museum shows, our classical teachers are far behind those of Europe.

It may be well to remind ourselves here that Latin, in the age when it was getting its hold upon our educational system, was as practical as farming or engineering. It was the literary language of Europe. All the knowledge accessible or which was to reach the learned everywhere was in this language. The professional education it taught was to fit for the Church, of which the school was the servant. It was because it was so strictly, so severely, and so long a vocational study that it acquired its hold, which has persisted even to the present, and indeed it is still vocational for it is taken essentially by those who wish to teach it or who

will need to use it in scientific nomenclature. It is an inveterate trend of the mind that in proportion as a subject becomes useless we tend to prate of its culture value; but this is a false cry, for nothing has the slightest culture value that is not useful.

The method of teaching modern languages must be freed from that in vogue in the classics. The rate at which our soldiers "over there" have picked up French suggests how much more we might do. We must not yield to the chauvinistic jingo cry of dropping German, which is going to be just as necessary and probably even more so in the future than it has been in the past. Throughout the war the German pedagogues have insisted that not only French but English must be studied there as never before. They are right, and we should not be behind them in this respect. The war has brought this country into far closer and more vital relations, not only with our allies but with our enemies, than ever before, and Spanish, too, is coming to have a new value. Many experiments have shown how vastly more rapid progress can be in a living foreign language if interest is centered upon the subject matter, and how much faster sentence structure and vocabulary are mastered if attention is chiefly focussed on content.

VII. As this is the psychological moment for ideals, let me add another. One of the boasted achievements of this country was the secularization of schools. It was hit upon at a time when there were several score of religious denominations that could not agree, and it was a master stroke in this olden time. But now it is time to remember that *religion* itself created schools and also that the very root of the impulse to even science is religious, for "it seeks to think God's thoughts after Him." Every great specialist who has made a vital contribution to the sum of human knowledge has the awe of the astronomer who feels that he is in the presence of a power and wisdom vastly beyond his own; this sense is the very tap root of all religion.

On the other hand, even if the records of religion were all myth they lie more closely about the heart of childhood than anything else, and now when this great war has not only brought all sects together in a common cause but has given the world a tremendous impulse to here again go back to first principles and reevolve religion from its true sources, viz.: the moral virtues of loyalty, companionship, devotion of the individual even to death to the greater cause for mankind, why should the school persist in holding itself aloof from these great moral forces which have been such a re-

inspiration of the warring nations, in armies and at home? We have, then, in France particularly a strange spectacle of a country-wide secular revival of religion, hardly less than a reconversion of the nation to its old faith, spiritualized and purged of the dross of doctrine and form. Here, if I am not mistaken, there is a loud call to those charged with the initiation of youth to life to refind the old or make new ways of arousing and utilizing the ineradicable instincts of youth to feel not only humanity, but to get in closer touch with the spirit of the universe itself that underlies all religion, as well as all science and all that is really great in art and literature. This demand is larger than that which has prompted the various efforts to introduce those parts of the Scriptures on which Jews, Catholics, and Protestants could agree; it is larger than the European attempts to set apart certain hours each week when the youth of all these creeds should be placed under the guidance of their spiritual advisers, and it would seem as though a commission of those representatives of all the great sects that have the new vision might work out a channel for these spiritual forces that are striving now for reincarnation. This is not the time or place for details here, but I do want to register my own deep conviction that something new and very great is here possible.

We have been analytic but a synthetic age impends. Patriotism when in tents always has a theocratic trend, and there is a real religion of the trenches rudely camouflaged, as it always is, which must be recognized and developed. Psychology, too, is finding new and strange points of *rappor*t between sin and regeneration; God and humanity; immortality and eugenics; prayer and the Freudian wish or the Adlerian *geltungstrieb*; the changes of adolescence and conversion or confirmation; the Holy Spirit and ecstasy or second breath; the Johannean love and sublimated eroticism; Heaven and Hell and the Kantian sense of justice that makes man feel that sin and suffering, and also virtue and happiness ought to get together and ultimately will do so; confession and psychoanalysis; and many more new correlates, which make science and religion henceforth, as Webster in his peroration said liberty and union should be, "inseparable now and forever." But this is too large a theme to discuss here.

I have touched in the most superficial way only these few points in order to illustrate my sense of the vast new responsibilities placed upon education to-day. It is our system of education from the kindergarten to the university that ought to be the chief heir of the results of the war. Upon it also is laid the burden of establishing in the hearts of

man a new world order. It is not a task of a day but of many years of arduous and concerted work. Many of the old issues will slowly fade as new problems take the center of the stage. In this era the main thing is to have in mind not primarily the mechanism of the organization, the perfection of a system which if too perfect may bring a sense of finality and achievement that is fatal, but to keep everything plastic, to recognize that educational values are everywhere supreme, that the worth of every human institution depends ultimately upon how far it fits the nature and meets the needs of mankind. For us teachers our "pillar of cloud by day and of fire by night" should be the nature and needs and possibilities of childhood, and the value of all topics and methods alike is what they contribute to bring the rising generations to an ever higher and more perfect maturity.

We educators are called on by the very successes of our arms to do for this country a work such as that which Fichte did more than a century ago in the day of his country's humiliation. It is a time when even our experts need a larger orientation, when the sense of our limitations weighs most heavily upon us and the need of widening our *aperçus* into great highways is imperative. We ought to be *the* educational nation of the world as we have become the new leaders of its democratization. The psychological pedagogue must be an engineer in the domain of human nature. A new and bloodless but yet greater war against ignorance and the evils following in its train is opening, and we educators must not be slackers in taking up our spiritual weapons and going forth to this great spiritual war.

## BOOK REVIEWS

*Psychological Tests. Revised and Classified Bibliography.* By DAVID MITCHELL and GEORGIE J. RUGER. Bureau of Educational Experiments, 16 West 8th St., New York City, 1918, Bulletin 9. 116 p.

This excellent bibliography places us under renewed indebtedness to the Bureau of Educational Experiments. It contains 1,428 titles, and is, so far as the reviewer is aware, the best list of books on psychological tests that has been published. The titles are classified under such rubrics as Theoretical, Methodology, Individual Scales, Individual Tests, Statistical Methods, Group Tests, Results of Application with Children, Adults, Feeble-minded, Psychopathic, and Delinquents, etc. The work is so admirably done that the reviewer is reluctant to criticize, but to him personally the bibliography would be much more convenient if all of the titles were given alphabetically by author in one list and then a subject index given referring by number to the different titles on different topics.

W. H. B.

*Bureau of Educational Experiments Bulletins.* New York, 1917 and 1918.

- No. I. *Playthings.*
- No. II. *A Study of Animal Families in Schools.* By LAURA B. GARRETT.
- No. III. *Experimental Schools: The Play School.* By CAROLINE PRATT.
- No. IV. *Experimental Schools: The Children's School, Teacher's College Playground, The Gregory School.*
- No. V. *Experimental Schools: The Stony Ford School, The Home School of Sparkill, N. Y.*
- No. VII. *Camp Liberty: A Farm Cadet Experiment.*
- No. IX. *Psychological Tests: Revised and Classified Bibliography.* By DAVID MITCHELL and GEORGIE J. RUGER.

This set of bulletins reviews some of the experiments in educational methods conducted under the auspices of the Bureau of Educational Experiments. The first,—Playthings,—emphasizes the value of the spontaneous play of the child as a means of creative expression. Real toys are defined as those with which the child can indulge its constructive instinct, and the finished, mechanical products which we thrust upon our children are unsparingly condemned. "If children are let alone with play materials," the bulletin pointedly remarks, "if, for instance, they are left with paper and crayons, they will learn to use playthings very quickly and effectively. Left to dig out the 'soul' of an object for himself, and to transfer this soul to paper, which is, after all, the true province of art, a child under six may produce something that at first sight seems to our hide-bound imaginations grotesque. But he has drawn the essential rather than the object itself. Take the small boy of six who drew aeroplanes, guns, ships, and then smudged the whole thing with red crayon. When asked what the drawing represented, he said, 'Why that's war. Isn't it a mess?'"

Caroline Pratt's play school (Bulletin No. III) represents the attempt to utilize the child's constructive impulses and creative imagina-

tion in education. In their activities, the pupils of this happy little school not only use the materials provided specifically for play purposes, but in the course of their dramatic activities, turn the furnishings of the room into stage scenery, etc. Besides encouraging the children to work out in their play the social and economic problems which will face them on a larger scale in later life, Miss Pratt tries to develop the artistic spirit of the children in her care. "There are possibilities of an art life in every individual," she remarks. "The failure to develop an art impulse in education is partly due to the non-recognition of the fact that the free play of children is art. As the children play with drawing materials, with plasticine, with blocks and toys, with words, with dramatics, the emotions are freed and in a primitive way art is produced. The emotional processes in the children's play are identical with the processes we call art in adult life, and which, with an acquired technique, give us art production." Perhaps Miss Pratt is not fully aware of the significance of her work from the psychological standpoint, but it suggests that she is performing an incalculable service to the child in this establishment of the artistic habit, since she is thus making easy the neural pathways for sublimation of the emotional nature which is so necessary for a normal adolescent and adult life.

In Teachers College Playground (*Bulletin No. IV*), the play of the child is used as a socializing agent. Equipped with very little material, the children sought and made their own playthings, partly through manual labor but still more through the magic gift of make-believe. The result is a community where each child has a wooden box "house," and where presidential elections are held and laws are made. There is even a newspaper, edited by a precocious six-year-old boy, who typewrites the sheet at home, and brings it to the playground. It contains news contributed by the other members of this play city.

The Children's School and the Gregory School, described in the same bulletin, are further attempts to bring out the social side of life for the children. The plan of the former is based on a sound knowledge of psycho-analysis, as its founder frankly states, and attempts to have the child express his emotional nature in channels of social productivity, principally through the play activities which border on the artistic. The viewpoint which this educational experiment embodies is thus expressed: "This is the function of all art: self-expression in forms that are of social and communicable value. . . . All work must serve as a channel whereby the individual's life energy may flow undiminished into the life of the group."

The Home School (*Bulletin No. V*) is also an application of psychological methods to the problem of educating and remolding the child so as to develop a normal and harmonious personality as free as may be from mental conflicts. It caters especially to the only child, the nervous child, the over-imaginative type, etc. Its basic plan is "to restore the beneficial activities and responsibilities of the big families of the past generation, with the elimination of all the disadvantages." The child is studied psychologically, and is guided into proper channels of self-expression and of contribution to the social group.

The Stony Ford School of Mr. and Mrs. Hutchinson, discussed in the same bulletin, is a socialistic enterprise, and desires to combine the maximum of personal liberty with the ideal of a cooperative community. The founders say of their work: "We are both socialists, and regard the school as one of the many elements in society which are working to abolish our present economic and social system and to set up a more humane one in its place. For this purpose, and for

human happiness in general, it is necessary to have persons who can think for themselves and play their part in society. On this principle we work; but we do not necessarily teach socialism. We want every child to work out for itself, as it matures, its own solutions of the problems of life. The children have no religious instruction. Their ethical philosophy they work out for themselves through their experience in the little community in which they live, and we try to lead them to apply these principles to the larger life into which they will go."

The other bulletins, while of great practical value, do not represent such radical departures in educational methods as these half dozen school experiments. The Bureau of Educational Experiments is doing a much needed and invaluable work in financing and backing with its prestige these new pedagogical ventures, and it is to be hoped that its findings will not be too greatly delayed in receiving an universal application to the school system.

PHYLIS BLANCHARD.

*Creative Impulse in Industry.* By HELEN MAROT. New York, E. P. Dutton & Co., 1918. 146 p.

Miss Marot's study of the industrial situation has led her to believe that the fundamental mistake in the economic organization of modern society is the failure to recognize the importance of the *creative potentiality* of the workers as a factor in production. Hence the universal conception that work is something which people endure solely for the sake of being "paid off," an ideal which is held in common by the capitalists and their employees, so that "the whole industrial arrangement is carried on without the force of productive intention; it is carried forward against a disinclination to produce." "It is obvious that the disintegrating tendency in our system is due to the fact that production is dependent for its motive force on the desire to possess." How to prevent this tendency toward disintegration, and to effect a social transformation which shall utilize the creative impulse in place of the possessive instincts, is the problem with which Miss Marot is called upon to deal.

So far, neither America, with its enthusiasm for scientific management, nor Germany, with its state policy of industrial education, has properly understood the real crux of the industrial situation. As a result, instead of attempting to reorganize manufacturing so as to bring the creative impulse of the workers into play, they have taken more obvious but less adequate methods of readjustment. In the American business plants elaborate schemes have been evolved which tend to speed up the productive processes by offering wage rewards, to prevent change of labor by profit-sharing, etc. The German plan of meeting the labor problem is entirely different, and is worked out through the educational system. In the elementary schools, the children are all classified at the age of ten, and allotted to industry or professional life. At fourteen, the specific trade or profession for which the child is to be fitted is decided upon, and no individual rebellion can change this decision. Like the present American solution of scientific management, it fails in proportion as it makes no allowance for the development of personal initiative on the part of the laborers.

Since capital and labor have so signally failed to solve their difficulties, it becomes the business of the educator to enter into this field. In this age of machinery it must be realized that the creative energy for which we must find an opportunity if we are to reorganize labor conditions from within rather than from without, must be utilized in a cooperative fashion, because the whole economic system depends on

the intricate association of individuals in the process of production of goods. As a concrete illustration of the means by which we can hope to accomplish this purpose, Miss Marot discusses, in detail, Caroline Pratt's experiment with a workshop and school centered around the manufacture of playthings. The reason for this minute description of the new educational experiment is that in it Miss Marot sees embodied the principles which industrial managers can readily and efficiently apply to other lines of manufacture.

The Toy Shop will employ a working staff of 40 young people between the ages of 14 and 17, who have left school with the intention of going to work. In this educational industry, they will be required to spend part of their time in school, where they will devote their study to problems intimately connected with their work, as the organization of the industry into departments, the keeping of accounts, plans for building and equipment, the economics of the enterprise, and the relation between service and art in goods. In the course of this instruction the children will perceive that they are allowed to assume greater responsibilities in the workshop as they have become fitted for them, and, when they go out into the real industrial world, they will carry over into business the same attitude toward managers and production that they have learned to hold toward their teachers and the making of toys.

Since the Toy Shop is conducted on a strictly self-supporting basis, it is quite feasible to extend its principles to other trades and to bridge the first few working years of the child's entrance into industry in this manner. By this extension of education we shall vitalize the mechanical association of workers which has been brought about by increasing division of labor, and make each individual feel himself an integral part of the whole organization. In so far as the employee can see the entire business enterprise in all its ramifications, and can thus be permitted to enter into its management as well as into the sharing of material profits, the creative impulse is released, and the association necessitated by modern machine methods of production becomes spiritual as well as physical.

Miss Marot's book has well been characterized as a new departure in education for vocations, for it is all of that. If, in addition, it points the way to a lasting solution of the difficulties between capital and labor, as its author believes it may, it is also to be considered a real and lasting contribution to social reconstruction.

PHYLLIS BLANCHARD.

## NOTES ON FRENCH WAR BOOKS.

*Nos petits pendant la guerre et nos grands.* By DAUTRIN ELIE. Paris, Plon, 1916. 156 p.

In this book the author shows that the French children have faced with great courage the strain of the war. It is a result, he says, of the development of physical culture in France before the war and also of the day-school system. He frankly condemns the boarding school system. Dautrin shows us some types of French children and soldiers in their special environment. For instance, "Nos petits à la mer," the "boy-scout," and "le soldat dans les tranchées."

*La guerre et la vie de demain. Bibliothèque d'histoire contemporaine.* Plon, 1916. 156 p.

Mr. Alcan published under this title a series of lectures given at the "Alliance d'hygiène sociale." They are all studies of well-known French scholars and authorities on the most important and up-to-date problems of reconstruction.

The first volume, particularly interesting from the pedagogical point of view, deals with all that concerns childhood. The second is entitled "Les risques immédiate de la guerre et leur répartition." The contents of the volumes are as follow:

## Volume I

*Boutroux Emile.* *La guerre et la vie de demain.* War is destruction, but it may produce good consequences. It gives the nation "a new lease of life and fecundity." France will keep her own ideals but will adopt many new methods to attain them.

*Prof. Chauffard.* *La Guerre et la santé de la race.* Medical observations made during the war are particularly encouraging. The nervous reaction of the nation following the formidable shock proves its power of resistance. The rôle of the medical science of tomorrow will be to strengthen more and more the power of the race.

*Mrs. G. Siegfried.* *La guerre et le rôle de la femme.* Mrs. Siegfried, after recalling the position of the woman in 1870, shows that today she plays a far more universal and efficient rôle. More educated and more united French women give to the country the best of their efforts.

*Prof. Pinard.* *La guerre et la défense de l'enfant.* Prof. Pinard presents to the public the "office central d'assistance maternelle et infantile." "To protect the child while protecting the mother" is the principle of this institution which, well organized, promises to render the most valuable services to the country.

*Mlle. B. Milliard.* *La guerre et la tutelle des orphelins.* Miss Milliard gives us an idea of the conditions before the war of the morally and materially abandoned minors. The death of many fathers multiplies these dependents and it is necessary that well-made laws should give some protection to these children.

*Dr. Mosny.* *La guerre et l'hygiène scolaire.* Dr. Mosny speaks in favor of integral, physical and intellectual education. He lays great stress on physical culture. School curriculums of today are not fit to answer the needs of such an education and should be modified.

*Montjotin.* *La guerre et l'enseignement primaire.* While refuting some charges brought against primary education, Mr. Montjotin ad-

mits the necessity of ameliorations. A greater importance should be given to physical culture; also a better orientation of professional apprenticeship. Primary education should become more and more a vital element for the country.

*Cohendy.* *La guerre et l'apprentissage.* The question of apprenticeship becomes more and more a social problem of great importance. How to fill the gaps made by the war? The practice of a profession is not sufficient; it needs a special training in a professional school. This should be made compulsory.

*Belot, Gustave.* *La guerre et l'enseignement secondaire.* Many charges have been brought against the secondary school system. Mr. Belot thinks that the government should establish free education in the Lycée, so that the accusation that the government draws social lines could no longer be maintained. Contrary to current opinion, the author believes that secondary education should be conducted along the lines of general culture rather than exclusively along technical and vocational lines.

*Liard, Louis.* *La guerre et le suniversités françaises.* Mr. Liard warns the student not to compare "Science" and "Kultur." There is a distinction. France has always been the country of real science. The author takes the opportunity to enumerate a great number of French scholars. More than ever is it necessary today to coordinate the work of higher institutions of learning if they are to keep their reputation. Regarding the methods, Mr. Liard gives some very interesting suggestions. He hopes that foreign students will come to the French universities and that the "scientific mecca shall no more be Germany, but France."

#### Volume II

*Dr. Doisy.* *Les nécessités de l'hygiène dans les lieux de combat et d'occupation.* Doisy calls the attention of the public to the urgent necessity of taking measures in order to save the health of many refugees returning to their devastated homes. The danger comes from the decomposing bodies, the spread of microbes and the inadequate accommodation of houses partially destroyed by bombardments.

*Dr. Bourrillon.* *La guerre et la rééducation des mutilés.* Dr. Bourrillon insists on the necessity of helping the disabled soldiers by giving them a salary instead of alms. It is dangerous to encourage idleness among the heroes of the war. Let us give them back their dignity of independence in fitting them to earn their living by suitable employment.

*Brissac, G.* *La guerre et l'assistance aux blessés de la tuberculose.* Every day brings up new cases of tuberculosis. We must prevent the discharged soldiers from spreading the disease among the civilian population. Mr. Brissac tells of the efforts that have been made in that direction. The soldiers suffering from tuberculosis should be kept in sanatoriums until it is safe to return them to their homes. Back in civil life, the sick will still be guided and advised by "hygiene advisors."

*Fontaine, A.* *La guerre et la question du chômage et du placement.* The declaration of war, while taking many workmen away from their tasks, has brought to a standstill many industries. Mr. Fontaine shows clearly the methods that are followed and the measures that are taken to fight the suspension of work. The war has given a new impetus to this kind of aid.

*Picquenard, C.* *La guerre et la question des salaries.* The war has produced a great change in the question of remuneration for work.

In some industries wages have been lowered, to rise up progressively again; while others are much higher than they were before the war. Mr. Picquinard explains some of these stupendous statistics. He thinks that in the coming days the working people will be better paid than they were before the war. The employers will have to accept the situation, but they will demand more production and improved methods from the workman.

*Gide, Ch.* *La guerre et l'organisation nationale de l'alimentation.* After explaining the working of the law of supply and demand, Mr. Gide offers a remedy for its many imperfections as shown during the war. He criticizes successively the rationing, the taxation and the system of municipal stores, and recommends the organization of co-operative societies.

*Carnande, F.* *La guerre et la reparation des dommages.* This reparation must be a right and not a charity. But this right is difficult to establish. Mr. Carnande explains these difficulties. He shows the complexity of the problems and the work to be done by the legislators.

*Risler, G.* *La guerre et l'habitation de demain.* The destroyed villages and cities will have to be rebuilded in a different way from what they were before the war. The principles of hygiene must be observed. Mr. Risler shows the great influence bad living conditions exert upon the population, and recalls the splendid results of the system of low rents. The time has now come to apply modern principles of domestic sanitation.

*Magne, M.* *La guerre et la reconstruction des trésors artistiques de la France.* Mr. Magne does not think that we ought to leave as they are the ruins caused by the war. He considers it a duty to restore them. It will be a difficult task. But the great monuments of France have always depicted the great deeds of history. We must not copy what existed before. The restored monuments will tell the story of the years we have lived through.

*Faure, F.* *La guerre et les ressources de la France.* Mr. Faure compares and comments statistics. He reaches very encouraging conclusions regarding the material resources of France. Shortage of money will not stop the war, but the author recommends saving and, above all, to avoid buying in foreign countries what can be bought in France.

MAURICE PIETERS.

## BOOK NOTES

*Projects in the Primary Grades.* By ALICE M. KRACKOWIZER. Philadelphia, J. B. Lippincott Co., 1919. (Lippincott's School Project Series, Edited by W. F. Russell, Ph.D.) 221 p.

This book is designed for normal-school pupils, reading circles, and as an aid for teachers in the kindergarten and the primary grades. It gives plans and outlines for series of lessons that cover many days of work. The author discusses purposeful and constructive activities, ethical aspects, Nature experience, literature, and formal subjects and purposeful activities. The book is illustrated by a dozen cuts, and is printed in very clear type. The point of it is that children's activities should have a definite practical end, that they should make things of real use.

*La Vie Universitaire à Paris.* Ouvrage publié sous les auspices du Conseil de l'Université de Paris. Paris, Armand Colin, 1918. 223 p.

This book is distributed by the Council of the University of Paris, under whose auspices it was prepared, and is intended to set forth the opportunities for advanced study in that University. It is a timely book in that many American graduates will soon be considering where best they can continue their studies abroad, now that Germany is *persona non grata*. There are many illustrations in the book, including photographs of distinguished professors of the past and present, various views of the University buildings, libraries, etc. The appeal is far too much to the glories of the past and too little to the opportunities of the present.

*Housewifery.* By L. RAY BALDERSTON. Philadelphia, J. B. Lippincott Co., 1919. 353 p.

This book seeks to show women how to save time, money, and energy in their home. It is addressed to the many women who do their own work or supervise household employees. It is the product of much experience, and treats of plumbing, heating, lighting, labor-saving devices, household supplies, furnishings, the care of books, clothing, cleansing and renovation, disinfection and household pests. The book is copiously illustrated.

*American Red Cross Text-Book on First Aid. A Manual of Instruction.* By Colonel CHARLES LYNCH, U. S. A. Philadelphia, P. Blakiston's Son and Co. (c. 1918). 209 p.

This volume discusses the structure of the body; microorganisms; bandages, wound dressings, stimulants, emetics; general directions for first-aid to the sick; bruises, sprains, dislocations, fractures; injuries due to heat and cold; electric shock; gas poisoning; unconsciousness; and a series of common ailments from colds to corns. We are then told of exercises and outdoor sports, how to carry the injured, and there is a final chapter upon war first-aid.

Another volume on *Home Hygiene and Care of the Sick*, by Jane A. Delano, treats of the causes and prevention of sickness, health and the home, the sick room, bathing, common ailments and remedies, and many other topics.

*The Dawn of Mind.* By MARGARET DRUMMOND. New York, Longmans, Green and Company. 179 p.

Child psychology, we are told, should bulk more largely in our thought and literature than it does. Many problems of general psychology can be best observed in the developing mind. Records of the mental growth of individual children are recommended, and we are told that competent mothers are rapidly now increasing.

The chapters are: The Physical Basis; Early Consciousness: Absorption and Expression; Some Fundamental Concepts, The Unlucky Baby; Memory, Imagination and Play; Sympathy, Suggestibility, and Self-Control; Reasoning; Language. The book is simple and elemental, and it is evident that the author has only a very limited acquaintance with the literature on the general topic or the special themes that are treated. It is rather a "goody" book and deals mainly with the obvious.

*The Psychology of Childhood and Youth.* By EARL BARNES. New York, B. W. Huebsch, 1914. 68 p.

The author was a pioneer in child study and has been giving popular lectures on the subject for a quarter of a century. This book contains outlines, of less than two pages each, of thirty of these lectures, with references at the end of each. The lectures outlined are: What a Child May Inherit, The Life of Early Infancy, Laws of Physical Development, Feelings and Emotions in Childhood, Sense Development in Children, How Children Think, Physically and Mentally Defective Children, Growth of Language, Mental Images and Imagination, Imitation and Suggestion, Habits and Instincts, Memory in Childhood, The Growth of Personality, Children's Sense of Time, The Sense of Law, Superstitions of Childhood, Growth of Reasoning Processes, Growth of Social Understanding, Leadership, Development of the Moral Nature, Criminal Tendencies in Children, Attitude of Children Toward Punishment, Prizes and Rewards, Development of the Aesthetic Nature, Religious Development in Childhood, Play in Childhood, Children's Attitude Toward Work, Children's Attitude Toward Property, Attitude of Children Toward Political Life, and Children's Sex Interests.

*Applied Eugenics.* By PAUL POPENOE and ROSWELL HILL JOHNSON. New York, The MacMillan Co., 1918. 459 p.

Eugenics, we are told, consists of a foundation of biology and a superstructure of sociology. These two parts its founder, Galton, recognized, but until recently sociologists have been indifferent to eugenics with the result that the science has been left to biologists, who have neglected the superstructure. The latter aspect has been stressed in this book, which lays special emphasis on the practical means by which society may encourage the reproduction of superior persons and discourage that of inferiors.

The more important chapters are the following: Modification of the Germ-Plasm, Differences Among Men, The Inheritance of Mental Capacities, Origin and Growth of the Eugenics Movement, Desirability of Restrictive Eugenics, The Dysgenic Classes, The Improvement of Sexual Selection, Increasing the Marriage Rate of the Superior, The Color Line, Immigration, War, Genealogy and Eugenics, and finally The Eugenic Aspect of Some Specific Reforms like taxation, child labor, vocational guidance, minimum wage, mother's pensions, housing, feminism, sex hygiene, trades unionism, prohibition, and pedagogical celibacy.

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## INFANT WELFARE

By WILLIAM L. DRALEY

Infant welfare movements focus upon health. The model New Zealand Society for the Health of Women and Children, for example, "is less concerned in reducing the death rate than in improving the health" of children, "more interested in firmly establishing the all-round fitness" of new arrivals who will live than in reducing the potential deaths.

According to Newsholme, "infant mortality is the most sensitive index we possess of social welfare." This is due to the peculiar susceptibility of the infant to the smallest environmental change. The efficiency of infant welfare agencies is therefore roughly measured by the infant death-rate, which remains incidental to the more positive emphasis.

Unless supplemented by a selective eugenics which automatically eliminated inferior stocks, to directly prevent the mortality of weaker infants should involve serious dysgenic effects and a population below the maximum physical fitness. Yule '10 and Snow '11 first applied modern statistics to the quantitative measurement of natural selection. Snow followed, year by year, the mortality of children in a large series of districts, as homogeneous as consistent in order to reach purely local and transitory conditions. The death-rate differs widely from district to district, in response to many environmental factors; so that single districts with a low or high mortality for the first year might remain low or high from 2 to 5 years, the same causes affecting both periods. Thus local environments largely obscure natural selection. Snow attempted to correct this "environmental factor" by using

deaths other than those of infants born in the particular year as a measure of its stringency. With this correction, he found those districts with a high infant mortality had in general a low mortality in the second period. While several of his series are probably "inadequate for so complex and delicate a biological problem as that of selective mortality," says Harris, "those series of data which biologically and statistically may be regarded as most suitable and trustworthy evidence are the most strongly in favor of the selective nature of infantile mortality." Harris concludes, natural selection in the form of a selective death-rate is strongly operative in the early years, and the evidence of biometric workers seems fairly "conclusive."

Mortality is differential, those that die, in general, differing in "their capacity to withstand the pressure of their environment," not random samples of the infant population. Laughlin, for example, found the mortality of 3,227 children in 701 normal families only 8.3%, the mortality of 4,640 children of 1,054 subnormal families, 17.4%. This suggests for infants born into subnormal families a great handicap in the struggle for survival, a ratio of 2:1 with normal families. 645 children with insane, feeble-minded, epileptic or alcoholic grand-parental types, showed a mortality of 20.6%; 1,242 children with such parental types, a mortality of 20.1%; 2,322 children with similar fraternal types, a mortality of 15.9%; 414 children of tuberculous families, of 15%. To the child born into a normal family, chances of survival are 11:1; a family with alcoholism, epilepsy or feeble-mindedness, 3:1; insanity, 5:1. This is partly through bad environments furnished by defective families, partly through "inborn inability to withstand the stress of infancy."

On the other hand, Ashby cites 7 English towns with a high average mortality of 135 per 1,000 births, followed by an equal average mortality in years one to five; while towns of a low average mortality of 62, averaged for years one to five, but 50 deaths per 1,000. Baker followed all births and deaths of children under 5 years in New York, for a 10-year period, and found the mortality between 2 and 5 years decreased even more than under 1 year. Parker (Somerset) found indications that children belonging to families with a high infant mortality are not so well nourished. Chalmers '13 found in tenements with a high infant mortality, the mortality of children 1 to 5 years also high. But these studies either ignore local environmental factors or compare a selective infantile mortality with what may be widely differing conditions in the 4th, 3rd, 2nd and 1st years of life of the 5-year group.

Assuming the selective value of infant mortality, the present wastage in child life is so crude, many are eliminated from stronger stocks. "Today we know," says Dietrich, "that a great infant mortality is a national disaster—on the one hand because numerous economic values are created without purpose and prematurely destroyed and on the other hand because the causes of the high rate of infant mortality affect the powers of resistance of the other infants, and weaken the strength of the nation in its next generation." That approximately 100,000 children die in this country between 1 and 5 years, after successfully passing the selective period of infancy, is evidence of grave social neglect. Many healthy babies perish from preventable causes, or become physically deteriorated, their digestive organs impaired, for example, or with tubercular infection, quite apart from the enormous physiological waste to mothers. Fisher suggests children under 5 years average \$1,500 in economic value. Thus a vast amount of potentiality is lost, and safer, saner methods of eugenic selection should eventually be substituted.

The 13th Census finds 10,631,364 children under 5 years, including 2,217,342 under 1 year. Statistics, 1913, for the registration area of 24 states and 42 cities in non-registration states, or 65.1%, show a mortality of 225,129 children under 5 years, 159,435 under 1 year. This would imply a loss for the entire country of over 345,000 under 5 years, including 243,000 under 1 year. In 1911-13, the deaths of infants constituted 18% of all deaths. The 1911 census bulletin estimated a rate of about 124 infant deaths per 1,000 births. This contrasts with the lowest foreign rates, 70 per 1,000 in New Zealand or Norway, 78 in Australia or Sweden.

Among the states, with complete registration of births and deaths, 1910, Rhode Island showed a mortality of 158 per 1,000 births, New Hampshire of 146, Pennsylvania 140, Maine 135, Massachusetts 131, Connecticut 127, Michigan 124. For the remaining registration states, only the ratio of deaths to 1,000 population under 1 year may be computed inaccurate because the latter is never complete. This shows Utah with a death-rate of 82.3 per 1,000 population under 1 year, Washington with 84.3, Kentucky 87.9, Montana 90.4, California 92.2, Minnesota 92.4, Ohio 115.9, Michigan 127.5, Maine 140.4, New York 143.6, Connecticut 143.7, New Jersey 148.8, Missouri 96.7, Colorado 104.5, Indiana 106.9, Wisconsin 108.0, Vermont 109.4, Pennsylvania 149.7, Maryland 152.1, Massachusetts 160.8, New Hampshire 164.9, Rhode Island 181.5. Total infant deaths numbered 4,354 in California; 1,643, Colorado; 3,342, Connecticut; 5,689, Indiana; 5,582, Kentucky;

1,734, Maine; 4,373, Maryland; 9,971, Massachusetts; 7,620, Michigan; 4,092, Minnesota; 7,077, Missouri; 812, Montana; 1,322, New Hampshire; 7,571, New Jersey; 25,059, New York; 1,394, North Carolina; 11,064, Ohio; 26,304, Pennsylvania; 1,635, Rhode Island; 916, Utah; 729, Vermont; 5,931, Virginia; 1,566, Washington; 4,997, Wisconsin. The entire 1910 group averages 127.6 deaths per 1,000 infant population; the 5 Western and Mountain states, 91; the 6 North Central states, 108; the 9 New England and Middle Atlantic, 149. Wide variation is immediately revealed. But these ratios cannot be compared with the true infantile mortality rates of foreign countries.

Statistics further show in all probability a marked reduction in infant mortality. From 1881-85 to 1906-10, the rate for Australia fell 37.6%, for New Zealand, 22.2%. In Europe, Sweden's rate decreased 32.8%, Norway, 29%; France, 24.6%; Prussia, 18.8%; Italy, 17.3%, and England (Wales), 15.8%. In England, for example, 1906-10 averaged 117 infant deaths per 1,000 births, 1906-12, with 115. 1900 showed a rate of 155 per 1,000 births; 1912, only 95.

Similar figures available in Massachusetts and Boston show decreases, 1885-1910, of 24.4% and 35.5%, especially marked during the past few years. No such figures exist for the rest of the country, although the census estimates the decrease per 1,000 infant population under 1 year, 1900-1911 as 19%. Rhode Island fell 30%; Massachusetts, 19%; New York, 19%; Maine, 23%; New Jersey, 21%; Connecticut, 17%; Vermont, 16%; New Hampshire, 13%; Michigan, 8%. The most startling decreases appear in cities. New York fell from 101.9 deaths per 1,000 births in 1913, to 94.6 for 1914, although during the five-year period 1901-05, the mortality was 167.1. This is a reduction of 43.4% in 9 years. Boston reached 99.5 deaths in the first 10 months of 1914. Cincinnati's death rate under 1 year fell from 160.2 per 1,000 in 1908 to 92.4 for 1914. Cities of 400,000 population or over in 1910, showed a decrease within the decade of 33% in Cleveland; 31%, New York; 31%, San Francisco; 30%, Philadelphia; 24%, St. Louis; 21%, Pittsburgh; 20%, Baltimore; 16%, Chicago; 16%, Detroit; 7%, Buffalo.

Cities also show a wide variation in mortality, even in the same counties. For example, Burnley and Nelson, similar cotton-weaving towns in Lancashire, vary as much as 60%, 1911; in Glamorganshire, Cardiff and Aberdare differ by 39%; in Yorkshire, such neighboring towns as Halifax and Dewsbury differ by 56%; in Kent, Bromley and Chatham, 65%. In the United States, the mortalities for registration cities

were 94.8 per 1,000 population under 1 year for Oakland; 100.4 for Seattle; 105.3, Portland; 110.7, Los Angeles; 113.6, San Francisco; 125.0, Toledo; 126.1, Cambridge; 130.8, St. Paul; 133.0, Birmingham; 134.0, Louisville; 134.7, Denver, 134.8, Grand Rapids; 134.9, New Haven; 135.1, Nashville; 135.8, St. Louis; 139.5, Chicago; 140.0, Omaha; 140.4, Columbus; 142.4, Spokane; 144.8, Indianapolis; 145.8, Newark; 146.2, New York; 146.7, Paterson; 146.8, Dayton; 147.2, Cleveland; 149.8, Cincinnati; 153.2, Jersey City; 154.9, New Orleans; 155.3, Atlanta; 155.5, Bridgeport; 162.2, Philadelphia; 162.9, Albany; 165.5, Boston; 168.0, Worcester; 170.4, Kansas City; 172.0, Milwaukee; 173.7, Providence; 176.4, Syracuse; 179.6, Pittsburgh; 180.9, Buffalo; 194.6, Washington; 204.8, Detroit; 209.6, Baltimore; 229.3, Richmond; 259.5, Fall River; 261.0, Lowell. In New York State, for example, Williams, 1913, estimates the infant mortality for cities of the first class as 105 per 1,000 births; second class (175,000-50,000), 135; third class (50,000-20,000), 120; third class (20,000-10,000), 138; third class (under 10,000), 100; or an average of 125 for the total third class.

This decline in the infant death rate has been greater than in the general death rate. From 1896-00 to 1906-10, the infant mortality of Massachusetts fell 13.1%; the general death rate, 10.5%. For 1900-1911, the 11 registration states showed a similar ratio of 14:19. On analysis, as Hibbs points out, this decline in infant mortality has exceeded the adult mortality decline, but been less than the decrease for childhood and adolescence.

Analysis of these high mortalities under 5 years shows a rapid fall in the curve of 225,129 deaths in the registration area; 159,435 were under 1 year, 33,917 at 1 year, 15,364 at 2 years, 9,498 at 3 years, 6,915 at 4 years. Moreover, the mortality of the first year shows a proportion of 43.2% less than 1 month and 28.4% less than 1 week. Koplik '14 finds 33% of deaths for the first year in the first month, and fully 73% of this mortality in the first week. Schwarz '14 finds of 1,200 deaths the first month in New York, 130 occur the first week, 38 the second, 42 the third, and 106 the fourth. Holt and Babbitt '14 found for 9,318 living births at the Sloane Hospital for Women in New York, a mortality of 1.5% the first day, 2.5% the first week, and 3.1% the first 14 days. Similarly, for the Munich University Clinic, 9,610 living births, 1911, Kerness gives a mortality of 2.5% the first 8 days. Census mortality statistics '13 show of 159,435 deaths under 1 year, 45,332 in less than 1 week, 7,751 the first day, 5,378 the second, 10,841, 3-6 days, 68,977 deaths in less than

1 month, 10,223 the first week, 7,494 the second week, 5,928 the third; in 1 month, 14,912 deaths; 2 months, 12,225; 3-5 months, 27,225; 6-8 months, 19,896; 9-11 months, 15,731.

At least 40% of such mortality among infants and a still larger proportion of deaths under 5 years, Mangold regards as strictly preventable. Rich '05, on the basis of statements by Holt, Dock, Jennings, Baker, Forchheimer, Crozer-Griffith and Morse, estimated as preventable, 44.8% of the deaths under 1 year in Michigan, 1900, and 54.9% under 2 years, 48.7% under 5 years. Fisher of Yale computed the percentage of preventability as 47 for all diseases with the median age at death under 1 year, and for other diseases of childhood, as 67.

In the United States, two important organizations dominate this phase of preventive welfare, the federal Children's Bureau, and the American Child Hygiene Association. In 1915, the Children's Bureau, with \$164,640, increased its staff to 76. This bureau has studied the infant mortality of Manchester (N. H.), Brockton (Mass.), Saginaw (Mich.), and Johnstown (Pa.). The American Association, through the American Academy of Medicine, was organized 1909. Its headquarters are in Baltimore with a total of 721 members. Through its 128 affiliated organizations in 68 cities, 28 states, it affords a real network of centers of influence. Among its committees may be mentioned those on Vital and Social Statistics, directing the campaign for improved birth registration, Nursing and Social Work, with informal reports on standards, Obstetrics, investigating midwifery conditions, Pediatrics, with studies on maternal nursing, heat and other environmental factors, Public School Education, emphasizing continuation home-making schools. The Association maintains an educational campaign through publications, correspondence and a traveling exhibit, and annual meetings, Baltimore, Chicago, Cleveland, Washington, Boston and Philadelphia. The first important conference to discuss the hygiene of infancy, however, was the first International Congress of Hygiene at Brussels '76, with greater emphasis at the second, Paris, '78. A few of the more important include the National Congress for Infancy at Florence '96, the League against Infant Mortality, Paris '02, the International Congress of Milk Depots, Paris '05, the National Conference on Infant Mortality, London '06, the International Union for the Protection of Child Life, Brussels '07, a large exhibit in Berlin '08, portraying the problem of infant mortality in all its phases, a second National Conference on Infant Mortality, London '08, the German Society for the Protection of Infants, Munich '09, the third

International Congress for the Protection of Infant Life, Berlin '11, the English-Speaking Conference on Infant Mortality, London '13.

Prenatal care constitutes the first broad division of infant welfare embraced by these institutions. According to West (Children's Bureau), 1912, 39% of the deaths under 1 year, 73% under 1 month, 86% under 1 week, 95% under 1 day, were ascribed to prenatal causes, such as malformations, congenital debility, premature birth. According to Newman '06, such causes contribute to about 30% of all mortality in large urban districts, for example, in Finsbury, London, 1901-05, with 30.3%, Glasgow, 1903-04, with 32.2%, Dundee, 1905, with 34%. These include congenital malformations, premature birth, atelectasis, atrophy and debility. In England, 1911, of an infant mortality of 130 per 1,000 births, 41 died of such causes as prematurity, debility, atrophy, congenital defects, injuries at birth, starvation. Holt '09 classified the causes of 44,226 deaths under 1 year in New York, Philadelphia, Boston and Chicago, as 25.5% to congenital debility, 5.8% to congenital malformations. Koehler and Drake, in Chicago, 1911, found 24% infant mortality due to congenital defects and childbirth; the State Board of Health in Maryland, 17.1%. In a total mortality of 5,279 in the first 4 weeks, Koplik '14 found fully 2,753 (52.1%) classed as congenitally weak. These statistics also showed in Greater New York 936 deaths through instrumental interference, the Sloane Hospital but 32 in 291.

Mortality statistics, 1913, show of 21,362 deaths under 1 day, 13,078 were from premature birth, 2,802 from injuries at birth. Of 45,332 deaths under 1 week, 21,697 were premature births; 7,394, congenital debility; 5,121, malformations; 4,657, injuries at birth. Of 68,977 deaths under 1 month, there were 26,124 premature births; 11,659, congenital debility; 7,013, malformations; 5,086, injuries at birth. Of 159,435 deaths under 1 year, 52,865 were from causes peculiar to early infancy, including 27,359 premature births, 15,839 deaths from congenital debility, 5,131 injuries at birth, while 8,813 deaths were from congenital malformations.

Holt and Babbitt '14 studied 10,000 consecutive confinements over a period of 6.5 years, 1913, at the Sloane Hospital for Women in New York. They found 253 abortions and 9,318 living births with a mortality of 3.1% in two weeks. Of these deaths, 58% were due to congenital weakness and atelectasis, the physical condition of the mother being an important factor as 56% were in poor condition, 31% in medium. But 20% of the deaths were through conditions intimately con-

nected with delivery (accidents of labor, hemorrhage, sepsis and asphyxia); and 4% to malformations and congenital diseases other than syphilis; 4% to syphilis. Similarly, of 117 deaths in 4,500 pregnancies at the Free Outdoor Maternity Clinic, New York, Schwarz '14 found within the first month, 52 deaths from prematurity, 35 from syphilis.

Holt and Babbitt further found stillbirths one of the large causes of infant mortality, there being 429, or 1.5 times the deaths from all causes for the first 2 weeks. The causes were prolonged, difficult or complicated labor (reduced by skillful obstetrics), in 45%, toxemia of pregnancy in 14%, syphilis, 9%; prematurity, 4%. The Sloane Hospital is a closed institution with every modern device. Similarly, Kerness among 10,297 confinements at the Munich University Clinic found 5.22% stillbirths in 4 years, 1911. Schwarz '14 in 4,500 pregnancies found 84 still births and 32 abortions. Of 142,280 births in New York City, 1912, stillbirths were 4.64%; of 141,765 in 1913, stillbirths were 4.65%, as compared with 4.29% at the Sloane Hospital. Similarly, in Boston the still-birth rate, 1901-10, was 4.01; in 1911, 3.98. Of 2,084,738 German births, 1906, 3% were stillbirths.

An intensive study of 705 foetal deaths in 10,000 consecutive admissions to the Johns Hopkins obstetrical department, including an autopsy for nearly 90%, was made by Williams, 1914. Three hundred and thirty-four of the deaths were premature and 371 mature. He found syphilis the most common etiological factor, with an incidence of 26.4% (35% colored, 14% white). Three hundred and fifty syphilitic children were born, while 40 or more were probably undetected. Dystocia (following mechanically difficult labor) was found to cause 17.4%. This is due largely to pelvic abnormalities, excessive size or abnormal presentation of the child, and 50 of his 74 cases were judged preventable. Prematurity caused 7%, while all but 4 of 23 deaths (3.2%) from inanition were premature. One-half this mortality should be readily prevented, as overwork and poor nutrition in later pregnancy are important causes. Williams found toxemia (including eclampsia, nephritis and occasional rare conditions) in only 6.5% of the deaths, but estimates this might be reduced two-fifths. He found 22 deaths (3.1%) from placenta praevia, the chief preventive being good obstetrical care in preceding labors. From congenital deformities, there were 24 deaths (3.4%), and 13 (1.8%) from premature separation of the placenta, both unavoidable. While 11.2% were due to various causes. Williams concludes that 40% of the foetal mortality in his material might have been reduced. But this total mor-

tality of 7% under the exceptionally competent nursing and resident staff at Johns Hopkins implies striking mortalities in inferior institutions.

To meet this excessive mortality of the first month is essentially a problem of prenatal care. Physical disability on the part of the mother through disease or malnutrition reacts upon the foetus, whose development is profoundly affected through the blood-stream of the mother. Newman, for example, cites an investigation of 357 dead infants of the poor, Finsbury, London, which found 140 mothers (39%) with poor physique and a history of ill-health during pregnancy, of 175 infant deaths in the first trimester, 49%, of 111 deaths from immaturity, 55%. These toxemias include not only ordinary infectious diseases on the part of the mother, but more especially tuberculosis, syphilis, alcoholism, her use of drugs, or occupational, particularly metallic, poisoning, and fatigue through overwork.

The experiments of Landouzy '12 would tend to rank tuberculosis of the mother with alcohol or syphilis. He found the death rate for young guinea pigs, rabbits and dogs as high as 41.9%; while the offspring were frequently below normal weight, and the later development of the guinea pigs especially retarded. Laughlin found the mortality in 447 children of tubercular families, 15%; of normal families, 8.3%. Grunberg '12 in his critical analyses of 568 families found parental tuberculosis gave a much higher infant death-rate and more frequent under-development. The registration area, 1913, shows 2,491 infant deaths.

Nichols refers to the almost deadly certainty that the syphilitic husband will infect his wife. Finger and Landsteiner, for example, developed a syphilitic lesion by spermatic fluid from a case in the secondary stage (monkey), similarly by Uhlenhuth and Mulzer '13 (rabbits), infecting young rabbits in utero by producing the disease in the mother. The disease may be latent in either mother or child, and according to Mott, large numbers of apparently healthy infants are infected with syphilis which appears later. Fournier estimates infection before conception results in a mortality of 65% and a morbidity of 70%; after, 39% and 72%; while infection from the mother gives a mortality of 60%; from both father and mother, 85%. Foetal syphilis, Ballantyne estimates, averages 46% of the pregnancies which end disastrously, and an infantile mortality of 42%. The Report of the Medical Officer of the Local Government Board, 1913-14, estimates a total ante-natal mortality, including stillbirths, of 150 per 1,000 births, one-half of which is ascribed to syphilis. Accord-

ing to Morrow, Bennie even goes so far as to estimate 30% of the morbidity in the Children's Hospital, Melbourne, caused by syphilis, and the presence of the syphilitic factor in some 40% of the children who died. In the registration area, 1912, there were 640 deaths under one month from syphilis; in 1913, 1,894 deaths under 1 year. Jordan '13 implies 10% of the population are syphilitic. For example, Melbourne '13 made notification compulsory within an area of 10 miles radius, and proved at least .5% of the population definitely syphilitic.

Craig and Nichols '13 find the majority of cases treated in the most approved way by mercury and potassium iodide uncured, a small amount of salvarsan fails to produce permanent effects. Syphilis is positively tested by a series of Wassermann reactions, the provocative Wassermann, examination of the cerebrospinal fluid, or the luetin reaction, but Nichols in a series of 12 found any single test unreliable. Marriage of the venereally diseased should be a criminal offense, and is already prevented in five states. In the expectant mother, it is essential to recognize syphilis at the earliest moment, and subject her to appropriate anti-syphilitic treatment, although, according to Williams, not more than one-fourth present lesions from which diagnosis can be made. Unless certain, the birth of a dead child should be followed by the Wassermann test, for prenatal care must take thought of future pregnancies and insure proper treatment. Compulsory, confidential notification, as by the California State Board of Health, is essential for control. Schneider '13 in his questionnaire study of health departments in 218 cities found 14 had developed case reporting of venereal diseases, 46 cities gave a free laboratory diagnosis, 4 gave free dispensary treatment, 3 forced dangerous cases into hospitals, 1 prohibited them from food-handling places, and 2 offered hospital care to indigents. Eight cities inspected prostitutes regularly, but with unsatisfactory results, 4 relied on publicity, 1 placarding houses.

Alcohol acts as a poison to all forms of life, and is a serious "mal-adaptation." That alcohol may pass from mother to foetus was shown by Nicloux '00 by animal experiment and examination of foetal blood from the cord and placenta with alcohol given 1 hour before labor. Sullivan '99 found in Liverpool, 55.8% of the children of 120 inebriate women died under 2 years, with a progressive death-rate in the alcoholic families. At Paris, Arrivé in 402 poor working-class families, with 1,648 conceptions, found 11.5% abortions and 3.5% premature births with alcoholic parents. The desire for alcohol is an increasingly intense force in the United States, in spite of private and social sentiment, education, legislation, and an

organized opposition rapidly growing in effectiveness. Consumption had increased from 4.08 gallons per capita in 1850 to 22.79 gallons in 1911. Similar effects result from the mother's use of such drugs as morphine, cocaine, or opium. While maternal metallic poisoning, such as arsenic, phosphorus, mercury or lead, react upon the foetus. For example, Paul '60 found in 112 pregnancies involving lead poisoning, 55 abortions, 4 premature, 4 stillborn, 36 deaths, and only 13 living.

Malnutrition of the mother similarly exerts an environmental action upon the foetus. Paton '04 found female guinea pigs well fed in pregnancy, compared with mothers on a low diet, gave birth to much finer, healthier young, with 31% greater average weight. Prochownick has shown by a series of 48 cases the possibility of reducing the size of infants by dieting the mother. Newman, for example, cites an investigation of 357 dead infants, Finsbury, in which 5% of the mothers showed marked poverty and insufficiency of food.

Malnutrition implies fundamental social reforms, but direct remedial efforts are well isolated. Charlottenburg, Germany, for example, 1912-13, furnished every needy pregnant woman with a good meal daily for 4 weeks before confinement. According to Ashby '15 many of the 200 or more infant consultations and schools for mothers in England, provide meals for expectant mothers. Best known is the St. Pancras School for Mothers, with a special dinner fund which provides simple daily dinners, slightly below cost, for mothers during the last 3 months of pregnancy, if ordered as a medical prescription. In the United States, agencies giving prenatal care most frequently coöperate with the proper relief agencies, such as the Associated Charities. Thus the Associated Charities of Washington will supply milk or other food to expectant mothers. Or pregnant mothers in families under the New York A. I. C. P. are not only referred to their Bureau of Educational Nursing for careful instructions in diet, but if necessary their Relief Bureau sends extra food. On the other hand, infant milk stations may directly furnish milk to pregnant mothers, for example, the E. M. C. Memorial Infant Welfare Station, La Salle (Ill.), the Syracuse Infant Welfare Association '14, or the Children's Aid Association of Indianapolis.

Industrial overstrain and hard work may indirectly injure the foetus through the pregnant mother. Knox estimates that more than half our pregnant women are overtired, particularly in rural and factory sections. The Thirteenth Census found female industrial workers 19.5%; particularly in the hosiery and knit goods industry, 64.5%; women's clothing,

63.3% ; confectionery, 58.1% ; silk goods, 57.1% ; men's clothing, 55.5% ; druggists' preparations, 51.3% ; canning and preserving, 49.8% ; tobacco manufacturing, 46.5% ; woolen goods, 41.3% ; cotton goods, 38.7% ; boots and shoes, 33.3%. Among valuable investigations in this field may be noted those by the Massachusetts Bureau of Labor Statistics '84 and the United States Commissioner of Labor '89 and '95-'96; more recent investigations by the Bureau of Labor Statistics, for example, Obenauer's studies of Maryland, California, the District of Columbia, and Chicago; by the Woman's Department of the Minnesota Bureau of Labor; by Consumers' Leagues, as in Oregon; the Kentucky '11 commission to investigate the conditions of working women; Missouri's Senate Wage Commission; the Massachusetts Minimum Wage Commission; the Industrial Welfare Commission of Oregon; the Ohio, Wisconsin, Washington Industrial Commissions; or the New York Factory Investigation Commission and similar commissions in Connecticut, Indiana, Michigan and Ohio.

Physiological handicaps make women more subject than men to the new industrial strain, a susceptibility which is increased during the child-bearing period. According to Keir, 156 women in the cotton mills are ill for every 100 men. In European cotton mills, Schuler and Burckhardt found the relative morbidity in spinning rooms, 128:100, in weaving rooms, 139:100. Records of the German sickness insurance societies 1888-1907, show an average of 23.4 days sick for women, 18.5 for men; and a similar report by Swiss mutual insurance societies, 1903, women 32.46 days and men only 23.55.

Industrial strain is far more complex than accidents from machinery or materials, injuries from toxic substances, fumes, excessive dust, extremes of temperature, or other unsanitary conditions. At present work in mines is forbidden women in 17 states, in saloons by 14 states, while 3 states forbid women from cleaning moving machinery. Goldmark calls attention to incidents of industrial work detrimental to the reproductive system, such as overstrain from excessive speed and complexity, prolonged standing, and the absence of a monthly day of rest. The needle trades, for example, are characterized by noise, speed, excessive hours and great irregularity; the textile industry through improved equipment, adds complexity; the canneries, for example, combine speed and monotony; shoe manufacturing involves the minutest subdivision, in rapid mechanical rhythms; the electric lamp industry is characterized by minuteness of work and extreme speed. Abuse of the piece-work system results in a speed and intensity for-

merly unknown. Keir suggests the total result of long standing or sitting in one attitude may be organic disturbances, such as make child-bearing dangerous. In long standing, as compared with men, the bones of ankle and feet are too small, the knee less adapted, the leg muscles with a shorter purchase, thus throwing the strain upon the back and tending to congestion about the hips, particularly as 49.3% such women '00 were under 25 years. According to Keir, the uterus may be crowded out of place or congested, menstruation become irregular and difficult. He estimates 40% of former factory girls, now married, are treated for pelvic disorders before 30. He concludes, "lifelong malnutrition added to pelvic deformities acquired by work is a serious drawback to the motherhood of the working woman." Broggi '05 similarly found the average fecundity of 172,365 Italian working women only 45 per 1,000, of Italian women, 120. Present regulation is based on "toleration within limits." Arizona alone '13 forbids the work of women "in any capacity in which they must remain standing constantly." To be sure, only 4 states '15 (Idaho, Mississippi, Nevada, New Mexico) failed to require suitable seats for females in at least mercantile establishments, the majority extending to manufacturing and mechanical, and several states to practically all employments (Arizona, Arkansas, California, Kentucky, Louisiana, Missouri, Montana, Ohio, Pennsylvania, Texas, Washington and West Virginia). Because impossible of enforcement, such laws are of little real import. Nearly all states, however, require sanitary and separate toilets for women workers; about a third make provision for women's dressing rooms.

As regards hours of labor, a Royal Canadian Commission '07, for example, on medical investigation, found the strain in telephone service so excessive as to recommend a maximum of 6 hours. The average for the United States is 8.5 hours. Moreover, with 225 calls per hour regarded as the breaking point, Goldmark found overloading in excess of 275 per hour in such exchanges as Birmingham, Kansas City, Los Angeles, San Francisco and Seattle. The Federal investigation of wage-earning women and children, similarly found 56.4 hours a week in miscellaneous manufactures in Chicago, 55.5 in New York, 53.3 in Philadelphia, 53 in Baltimore. In general, California and the District of Columbia alone require a 48-hour week for women; and there are but 4 eight-hour states, Arizona, California, Colorado, District of Columbia and Washington. States requiring less than 10 hours are Arkansas, Idaho, Maine, Minnesota, Missouri, Montana, Nebraska, New York, Oklahoma, Oregon, Texas and Utah. Most states fail

to set a legal closing hour as an aid to enforcement. In only about a third of the statutes, 1915, were there exceptions to the general tendency to do away with overtime work. Such exceptions cover violations. Butler '09, for example, found the employes of 34 Baltimore stores, 68.57% female, worked 60-80 hours a week in the holidays, over 51-59 hours. The Federal investigation of wage-earning women similarly found the average overtime of selected workers in New York, 17.3 weeks; Philadelphia, 16.6; Chicago, 13.5; Baltimore, 13, and noted a marked growth in minor ailments among girls after overtime periods. Massachusetts and New York '13 have effective rest-day legislation, 1 day in 7, for factories and mercantile establishments, but similar laws in California and Connecticut are nullified by exempting "any case of emergency." Kansas, Ohio and Wisconsin now empower their industrial commissions to fix hours, California and Oregon to lower hours.

The backwardness of America in forbidding night work by women is in striking contrast to Europe. Its serious moral and physical dangers have been shown by a series of investigations '01 under the International Association for Labor Legislation; for example, excessive fatigue through lack of proper sleep, tendencies towards tuberculosis, anemia, etc., through lack of sunlight, increased liability to strain and accident, and interference with normal home life. This Association '06 in Berne drew up an international convention to provide at least 11 consecutive hours of rest at night, including 7 hours between 10 P. M. and 5 A. M., with the 14 leading European powers as signatories, practically all of whom had enacted legislation by 1912. Federal official reports '11, for example, show outrageous duration of night work in New York binderies, in New York laundries by the New York Department of Labor. The Federal investigation of 59 North Carolina cotton mills '10, showed 31 operated by night, by 848 women and children (only 874 men); of 36 South Carolina mills, 5 at night, by 188 (only 155 men). Goldmark '10 found night telephone operators working 9 hours in Dallas and New Orleans, 12 in Kansas City, 15 in Springfield (Mo.). Only Connecticut, Indiana, Massachusetts, Nebraska, New York, Oregon, Pennsylvania and South Carolina forbid night work. None of these is an inclusive prohibition, the South Carolina law applying only to stores, for example, Indiana, only to factories. A small group of states shorten night work, Maryland, for example, limiting a 10-hour day to 8 hours.

The physical incapacities of women and their usual reluctance to undertake a thorough apprenticeship, generally relegates

them to unskilled, low-paid processes, with the additional handicaps already described. Butler's study '10, for example, of women in 400 Pittsburgh establishments, found only 31% operating and 14% tending machines, 14% wrapping and labelling, 23% at work requiring dexterity only, and 16% not even that; three-fifths earned less than \$7 a week, though more than one-tenth lived apart from their families. The New York Factory Commission '15 found of 57,000 girls and women in stores and factories, 1913-14, 60% earned less than \$8 in a typical week. Persons' study '15 of woman's wages in the United States concludes that 75% of female wage-earners receive less than \$8, 50% less than \$6, 15% less than \$4, with wages further reduced approximately 20% through lost time and unemployment. Yet the concensus of expert opinion, according to Woolston '15, is that \$8 is the minimum weekly wage under urban conditions for a self-supporting woman. The Massachusetts Minimum Wage Commission, for example, 1914, found \$8.28 the minimum weekly budget in Boston, for little more than the cost of physical necessities; similarly, the Oregon Social Survey '12 found the minimum yearly budget in Portland, \$545.

This industrial strain apparently reacts in a heightened infant mortality. Roughly, the mortality is abnormally high in the cotton mill and textile towns of Biddeford (Me.), Fall River, Holyoke, Lawrence, Lowell, or New Bedford. In England, the Registrar-General points to the high mortality of textile, pottery and mining districts. Reid '08 in Staffordshire found an infantile mortality of 187 per 1,000 births in 5 towns with 12% or more married women employed, of 153 in the 13 towns employing 6-12%, and of 140, in the 8 towns with less than 6% employed. Comparing two groups of families in similar environment, Reid over a period of 30 years found the infant mortality of the pottery towns exceeded other towns by 28%; while a study '08 of 5,000 infants under 1 year in the artisan class of the pottery towns showed an infantile death-rate 43% higher among factory mothers. Similarly, Newman, 1896-1905, found an average infant mortality of 182 per 1,000 births for 8 textile towns with 26.5% of the married women in occupations, and an infant mortality of only 150 in 8 towns with but 7.4% engaged. In Dundee, with very bad conditions of female labor, 1902-04, the infant mortality was 175 per 1,000, in Paisley, with far superior conditions, but 128. Goldmark cites an infant mortality in Bradford of 160 per 1,000 births, among working mothers, 40.8 among non-working. The medical officer of Kearsley points out, as the town developed into a manufacturing town, the

infant mortality rose from 143 to 229 per 1,000 in 1904, with a stationary general death-rate. As Blagg concludes, "statistics abundantly prove that the kind of occupation in the district does affect the infant mortality rate." The occupations of 31% of the married women in Wood Green, 1903-07, for example, with a mortality of only 98, differ from those of the 17.5% employed in Tunstall, with 203 infant deaths per 1,000 births, or the 21.6% employed in Farnworth, with 211 infant deaths.

On the other hand, Phelps in his Massachusetts study '12 found such factors in infant mortality as a high proportion of foreign-born, a high female illiteracy, and a high birth rate, constant over large areas, but the factor of woman's employment associated very uncertainly. Nor is the proportion of pregnant mothers employed sufficient to account directly for the high mortality of industrial cities. Hibbs '10 found only 5.6% of 1,810 Boston mothers had been employed during the pregnancy or infancy of the child. The Bureau of Labor's report on women wage-earners found in the men's ready-made clothing industry only 9.9% of the married women with children under 3 years; in the glass industry, only 14.1%; in the silk industry, 17.3% in the textile industries of New England and the Southern States, 19%. Indirectly, the Massachusetts census '05 showed only 11.1% of 573,673 mothers with children in gainful occupations.

Nor are differences in the mortality rates always sufficient to show a direct relationship. In Birmingham (England) '11 (St. Stephen's and St. George's wards), 1,657 of 3,777 mothers visited in 1908-10 were in gainful occupations, with a mortality of 179 per 1,000 births, and among the non-employed, 169 infant deaths per 1,000. Duncan '12 similarly showed in Birmingham that other factors than employment are operative, for of 1,276 mothers, 731 industrially employed, the infant death-rate for the non-employed was 161, for the employed 153 (although 167 for factory mothers). The Bureau of Labor's investigation, through Verrill, of 580 infant deaths in Fall River, although 45.9% of the mothers were employed outside the home during pregnancy, failed to find that the work of the mother in the cotton mill before child-birth was producing results noticeably different from the work (housework) of other mothers at home. The two classes, mothers at work and at home, are "not sharply defined," and mothers at home include "a considerable number of women who were formerly engaged in millwork and whose physical condition may still be affected in some degree by such earlier employment." Of the children of "mothers at housework

only," 54% were reported "not well and strong at birth;" of "mothers at millwork," 53%, which suggests "if there is an injurious effect of millwork, there must also be in many of these cases an effect almost in the same degree injurious resulting from the work at home."

An investigation in London by the Christian Social Union, for example, found the majority of married women employed as charwomen, etc., worked to confinement. Verrill's Fall River study showed 9% of the employed women worked until less than 2 weeks of confinement; 21% until a month; but a much larger proportion of women continued work in the home very close to confinement. The Johnstown survey '13 of 1,551 mothers, found 1,350 relinquished no household duties until the day of confinement. Newman cites in Finsbury, London, a study of 357 dead infants, which showed the mothers of 12% occupied in very hard work during pregnancy, 20% of 175 infants dying in the first trimester, and 24% of the 11 infants dying from immaturity. A similar investigation in Dundee '05 of 364 infant deaths, found 13.2% of the mothers worked at the factory to within a week of childbirth. A Paris study (S '13) showed the children of women working until confinement in a standing position weighed 5 pounds, 8 ounces, but of mothers ceasing work 8 weeks previous, 6 pounds, 5 ounces. Members of the German maternity benefits '13 working until 2 weeks before confinement, revealed 3.2 stillbirths, 5.5 complicating diseases, 5.5 miscarriages; but those ceasing work 2 months previous, only 2.5 stillbirths, 2.1 complicating diseases, 2.3 miscarriages. Similarly Pinard found the average weight of 500 infants whose mothers worked to the day of confinement, 3,010 grams; 500 with mothers spending 10 days in a maternity home, 3,290 grams; 500, spending more than 10 days, 3,366 grams.

To remedy such conditions, Connecticut forbids the employment of women "within 4 weeks previous to confinement;" Massachusetts and Vermont, 1912, within 2 weeks previous. Germany, for example, provides for 2 weeks, France permits 4 weeks before delivery, Switzerland (Berne) requires 4 weeks before confinement, Portugal forbids labor the last 30 days, Spain permits cessation, and Italy requires a month for rice field workers, while Servia requires 6 weeks and Greece 8 weeks. France, for example, grants 35 days with salary to staffs of the Department of Posts, Telegraphs, Telephones, and both France and Austria grant teachers leave for 2 months with full treatment.

No American state has yet recognized the justice and necessity of furnishing maternity benefits among the working classes

during such enforced idleness, for the extra expenses of confinement and the income loss. The sick-benefit insurance laws of Germany, on the other hand, affect 94.4% of the population. The revised codes '11 provides maternity benefits (or hospital treatment) amounting to half the daily wage for 8 weeks (6 following confinement) to women insured under the law. In rural districts maternity insurance is provided for at least 4 weeks. A physician or midwife may be furnished at confinement or earlier, and the nursing be extended to 12 weeks after confinement. Women in gainful occupations earning less than \$620 are compelled to insure themselves, contributing two-thirds, the employer one-third, to the extent of 2%-3% of their wages. The protection is therefore insufficient. In Austria, maternity benefits carry 60% of the current wages for women workers, for medical treatment and 4 weeks. Sick insurance is here compulsory for those earning less than \$487 in industry, building trades or railroads, and voluntary for home and agricultural workers, workers paying two-thirds, employers, one-third. Norway pays 60% of the wage for 6 weeks, with a physician or midwife if necessary, and compels the insurance of all wage-earners under \$321. In Hungary, 75% of the wage, for 6 weeks, with free medical aid, is received at confinement, domestic, commercial and industrial workers being compelled to insure themselves, paying equally with employers; but as Hungary is largely agricultural, the masses are not reached.

In Great Britain, on the other hand, a lump sum of \$7.20 is paid. As Great Britain (with Russia and Roumania) also pays to the wives of insured men, this may total \$14.40, with a free choice of physician. While a husband providing inadequately for his wife's confinement may be imprisoned one month. This maternity benefit would be very valuable to many non-insured women whose husbands are independent workers. The state pays 4c, women workers and employers 6c weekly, but if the wage is below \$2.20, the employer alone pays. The suggestion to replace the Societies by the Public Health authorities in administering the benefit, would allow complete oversight during later pregnancy and childbirth.

Switzerland pays to the sick funds a yearly subsidy of 80c for every woman member, who receives some \$4 at confinement. Sweden subsidizes sick funds which grant money at confinement for at least 2 weeks. France, however, is still forced to depend on state, municipal and private initiative. In nearly all departments of France, mutual aid societies for mothers, with dues of about 60c annually, provide, after 9 months' membership, free medical assistance in childbirth, and \$2.40

for 4 weeks. In 1909, membership numbered 21,000, and 23% of the expenses were met by the dues of insured members.

The great German and English systems of maternity insurance thus provide benefits through the sick funds. Such insurance is financially stronger, because contributed to by men as well as underpaid women, and cares for the women before and after confinement. Italy, on the other hand, has developed a national maternity insurance fund, 1912. Employed women under 20 pay 1 lira, from 20-50, 2 lire (38.6c), of which half is paid by the employer; the state adds 10 lire (\$1.93), or one-fourth the total of 40 lire (\$7.72) paid each working woman at childbirth on discontinuing work 7 weeks.

In none of these schemes is there sufficient relief to cover the expenses incidental to confinement, which is therefore supplemented by public poor relief or private agencies. For example, in London, the St. Pancras School for Mothers has a Provident Maternity Club whose members lay by a small sum weekly for help in the home and extra-nourishment at confinement, the school adding a penny to every shilling. Other districts, lacking such large maternity charities, have to include insurance for medical fees. Organizations similar to the mutual aid societies of France exist in the industrial centers of North Italy, paying \$4 at confinement in Milan and Turin, for example. Many German cities subsidize private agencies for home nursing. In Berlin '11, for example, the Home Nursing Association cared for 3,000 confinements. Karlsruhe and Sebnitz have municipal maternity funds, to which city, invalidity insurance institutions and private individuals contribute, with a monthly fee of 15c, adding \$5 to the sickness benefits at confinement.

Insurance is the "only basis that makes it possible for persons of small means to receive nursing without charity." Maternity insurance by a fee system, reaching families on small incomes, is a keenly felt need in the United States. In 1909, the Metropolitan Life Insurance Company, for example, commenced its free visiting nurse service to industrial policyholders, now extended throughout the country. With 1,633,044 premium-paying female policyholders 20-40 years of age, this nursing service for maternity under an attending physician, reached 11.4 per 1,000 females at child-bearing ages, 1913; 9.6 in 1912. In 1913, 20,959 puerperal cases were cared for (18,942 white, 2,017 colored), with an average of 7 visits (8.3 in 1912). Fees from family or employer to insurance company, municipality, relief society or fraternal organization, avoid the stigma of charity.

Together with malnutrition and overwork, excessive child-

bearing reacts upon an early infantile mortality, through exhaustion of the mother. Every premature death, stillbirth or miscarriage seriously burdens a family, reducing the physical energy of the mother and involving unproductive expense, while annual births are a severe drain on the mother's system. With an interval of less than 2 years between births, Dwart '11 found in 866 Middlesborough children a mean height of 38.6 inches; with an interval of 2 to 2.5 years, 39.9 inches; with 2.5 to 3 years, 40.3 inches; with 3 or more years interval, 41.7 inches; similarly for weight, 37.2, 38.8, 39.1 and 39.4 pounds. Fiske '13 cites a list of weakened children and broken mothers through rapid child-bearing. Of the 225 mothers, the majority 30-35 years, few were in rugged health, and only 6.6% had 5 or fewer children, while 13.7% had over 10; the total mortality was 23.7%. Hamburger '07 reported a study of 1,042 laborers' families with 7,261 conceptions, with an average of 7 conceptions per marriage in working class families, with one-half dying before 16, one-sixth from miscarriages. In the middle '80's, Geissler of Saxony showed this relation between infant mortality and the interval between births in an entire population. Records of the New York Free Outdoor Maternity Clinic '10, for example, covering 2,540 births in 9 years, show, with less than 4 previous children, a mortality of 77, with 4-8 a mortality of 127, with 8 or more (294 cases) a mortality of 170 per 1,000. Hibbs, 1910-11, in a study of 1,635 Boston births, instances a mortality of 138.4 per 1,000 with intervals of one year or less between pregnancies, 147.2 with 1.5 years, 127.9 with 2 years, 128.8 with 3 years, 106.2 with 4 years. Similarly, the Johnstown survey '13 showed among 1,491 mothers, 804 infant deaths in an aggregate of 5,554 pregnancies. For the first and second pregnancies, the mortality was 108.5 per 1,000 births; the third and fourth, 126.0; the fifth and sixth, 152.8; the seventh and eighth, 176.04; ninth or more, 191.9. In greater detail, Hibbs reports the house-to-house investigation in Boston, 1910-11, of 2,061 births grouped by prenatal (diseases of early infancy and congenital malformations) and postnatal causes. He found for less than 5 previous pregnancies (1,533 births) a mortality from prenatal factors of 29.4 per 1,000; for 6-9 pregnancies (475 births) of 33.7; for 10 or more pregnancies (53 births), of 226.4 per 1,000. This is a total of 31.5 deaths per 1,000 from prenatal causes, and Hibbs is able to conclude the prenatal factor varies with the number of pregnancies. Prevention here primarily involves the intelligent removal of the causes of possible economic pressure, including advances in rural development, free trade, and other fundamental social

reforms. But, as James points out, the government should also make lawful the dissemination of knowledge of contraceptives to assist moral restraint.

To meet the excessive mortality of the first month as outlined is the problem of prenatal care. Within the last few years systematic prenatal work has been accepted as an essential part of municipal social welfare programs. Schwartz '13 estimates that 9 in 10 expectant mothers fail to receive prenatal care. Or West '14 says, the "absence of adequate prenatal and obstetrical care for thousands of women has become one of the most insistent of present-day problems."

Prenatal care implies the use of every available means to conserve the health of the prospective mother, and is essentially "preventive medicine as applied to obstetrics." As defined by Williams, it involves "coöordination of the medical, nursing and social service resources of the hospital in the effort to obtain such treatment and supervision for the mother as will offer the greatest possible guarantee for the safe delivery of a normal child, which can be kept healthy by maternal nursing." The most popular system is a prenatal nurse controlled by a trained physician.

The first attempt to determine experimentally the advantages to mothers and infants from prenatal care "as a matter of routine throughout, as nearly as possible, the full period of pregnancy," was completed by the Committee on Prenatal and Obstetrical Care of the Women's Municipal League, Boston, over a period of 5 years, 1914. This experiment demonstrated prenatal care within the capacity of any thoroughly trained nurse, and standardized the visits to every 10 days, with 80-100 patients per nurse, more if districted. The cost was \$2.61 per patient, but for the best prenatal care \$5-\$6 was estimated. The nurses made 12,984 visits, averaging 2-3 months, and carried 1,512 cases safely to confinement. Only 9 maternal deaths occurred, or .6%, at confinement. Mis-carriages were less than .2%, with none in the last 3.5 years. Stillbirths '12 numbered but 2.7%, as compared with the usual average of 3.8%. Premature babies averaged only 1.7% of the total. There were but 4 cases of eclampsia (.2%), while 60 cases of threatened eclampsia the first year fell to 2 the fifth year. In these five years, infant mortality under 1 month was but 2.8%, for Boston proper '13, 4.3%. Not only were the infants more viable, but the birthweight increased considerably, averaging, inclusive of premature babies, 7 pounds, 11 ounces. In 1911, the New York Milk Committee began the second notable experiment in systematic care of expectant mothers, over a period of 2 years, so convincingly, the work

was later assumed by the Division of Child Hygiene. This Committee supervised 2,150 mothers for 2,102 living births, with but 3 maternal deaths. There were but 86 stillbirths, or 39.3 per 1,000, as compared with at least 47.6 for Manhattan, a reduction of 17%. There were but 60 deaths under 1 month, a rate of 28.5 per 1,000 living births, as compared with 38.2 for Manhattan, a reduction of 29.9%. In St. Louis, 1912-13, the Social Service Department of Washington University Hospital cared for 334 pregnant women, stillbirths being 13.1 per 1,000 less and infant deaths under 1 month, 6.3 less. Similarly the pregnancy clinic of the Boston Lying-in Hospital '13, according to Davis, received 1,652 new applicants from the hospital and out-patient department, with 1,869 subsequent visits; 430 were subsequently delivered in the hospital, 947 in the out-patient department. Of the 1,377 women under care of this clinic, 1,311 were discharged well, although 385 were with complications (albuminuria, 108; elevated blood pressure, 92; definite symptoms of toxemia, 62; contracted pelvis, 72; miscarriages, 2; gonorrhea, 4; syphilis, 2). Stillbirths per 1,000 living births for the clinic were but 28.9, as compared with 39.8 for Boston proper, 1913.

Having passed so positively the experimental stage, prenatal care is rapidly being standardized. A sub-committee of the New York Babies Welfare Association, for example, suggests neighborhood district centers (or central office), such as infant welfare stations, local dispensaries or maternity clinics; classification by streets; periodic information of cases early in pregnancy; ante-partum visits by selected nurses every 10 days to supervise and instruct; personal contact with family physician; medical care where complications exist; adequate care at confinement through nursing agencies, midwife agencies or out-patient departments; coöperation with established relief agencies; systematic records, including district maps, daily reports, and case records in detail. A report at the conference on prenatal work '12, South End House, Boston, similarly suggests a permanent committee of 7; coöperative districting, with a prenatal nurse in each district; coöperation with hospitals, dispensaries, milk stations, settlements, the Instructive District Nursing Association, and the Associated Charities; no medical responsibility for the nurse, but early medical supervision every 2 weeks, preferably every week, at least in the later months; a system of conferences for expectant mothers utilizing present agencies; uniformity of records, including social and medical schedules. As yet, for example, there is no standard way of bringing pregnant women under care by systematic, possibly automatic, methods. Abroad women auto-

matically register on collecting their maternity benefits. Certain large hospitals now give regular reports, as in Baltimore, Boston, or Providence. Where the city is districted, as in New York, Boston or Richmond, a house-to-house canvass is sometimes made. Eventually notice of pregnancy may be required by health authorities. On the other hand, there is already a striking uniformity in the instructions given by the nurse. The Instructive District Nurse Association, Boston, issues a printed set of instructions. In Cleveland '14 a committee of superintendents of nurses in the Babies Dispensary and Bureau of Child Hygiene, maternity dispensaries and Visiting Nurse Association, have uniform methods in teaching prenatal care for all public health nurses. According to West, prenatal nurses "advise regarding diet, clothing, fresh air and exercise, baths, daily bowel movements, avoidance of alcoholic drinks, avoidance of heavy and taxing labor leading to fatigue, care of the breasts, the special importance of maternal nursing, and also regarding the preparation for confinement, and the clothing for the baby." When necessary, they urge the necessity for medical care. For example, of 29 agencies, the nurses of 10 make urine analyses.

Williams would conduct prenatal care primarily from a properly equipped and supported dispensary. Prenatal nurses with obstetrical experience and training in social service should work with trained medical men. The woman should be examined as early as possible, including the entire body, with special reference to tuberculosis and syphilis. She should report regularly, with a specimen of urine, insured by a card-index for follow-up. A final medical examination should be held one month before confinement, after which, if entering a hospital, she should be supervised by the hospital nursing staff. According to Emmons, the medical examination includes histories of past illnesses and confinements, and present symptoms, including teeth, lungs, heart, blood vessels and pressure, abdomen, size and position of child if near term, rate and location of its heart, measurement of pelvic bones, urinary test of kidney functions, and prediction of the outcome. Kerr, for example, in the Glasgow Maternity Hospital, by such exact methods reduced the number of forceps operations, with pelvis mildly contracted from 91% to 47%, the infant mortality from 18% to 2%, and infant morbidity from 30% to 4%; similar results by Williams. The Committee of the Women's Municipal League, Boston, is now undertaking this more difficult problem of medical supervision during pregnancy and adequate care at confinement. This Committee is therefore developing "a chain of prenatal and

obstetrical clinics, which shall cover all parts of Greater Boston not at present suitably provided with facilities for such care," and gradually standardizing its work. At present, 2 dispensary prenatal clinics utilize young obstetricians and nurses of the Instructive District Nursing Association. The Maverick Dispensary is the health center of isolated East Boston, but served only 18 cases in homes, partly through local objections to a male accoucheur and competition by local physicians. The Peter Bent Brigham Hospital dispensary in 9 months delivered 90 cases, with careful medical supervision and prenatal nursing, for an average fee of \$7.22. Clinics for prospective mothers were reported by 25 organizations, at infant welfare stations, dispensaries and hospitals.

Similar intricate problems arising to produce infant mortality require a specially equipped division of child hygiene under the State Board of Health, as in but 6 states at present. West '14, in her questionnaire study, found 19 state departments with no prenatal activities. Bulletins on prenatal care, supplementing that of the Children's Bureau, for example, are issued by the departments of Oregon and New York, while booklets by boards, such as Indiana, Iowa, Illinois, or North Carolina, usually describe prenatal hygiene. The New York State Division of Child Hygiene, for example, has extended a certain amount of prenatal work to 32 cities; while 3 infant welfare exhibits are sent about the state in charge of nurses. The state is divided into sanitary districts, each under a supervisor, and provision made for a system of rural nursing which might readily include maternity work. There are 3,009 counties in the United States, 1916, and in every county seat there should be a center for health work. Carstens suggests boards of public welfare of 7 elected members in counties or groups of counties, through which state departments of health might work. Such public work, Carstens points out, should be along established lines, requiring permanent care or the elements of compulsion and control. If this will afford it wider application and the state is ready to equip itself for such service, all private work of demonstrated usefulness should thus be assumed.

As 53.7% of the population of the United States is classed as rural, 1910, the present wider range in prenatal care is largely rural. In the last analysis the state is the factor for dealing with this problem. In Great Britain, Ireland, Canada and Australia, district nursing is on a national basis, with funds, schools and general management sufficient to carry their services into the remotest, poorest sections. Canada, for example, has a chain of small hospitals from Vancouver to

Labrador, as centers for district nursing. New Zealand has a system of state registration of nurses, 4 government maternity hospitals, and seeks to provide every country hospital with maternity wards. The New Zealand Society for the Health of Women and Children, Dunedin, supervised by the government, extends its work to country districts through local committees in every township. As Nutting suggests, the simplicity and flexibility of a state public health nursing service, reaching the pregnant poor in their homes for prenatal care, is clear.

The United States, on the other hand, has but a few scattered rural organizations serving as pioneers, and the vast rural population as yet is hardly touched. Medical attention is also less available, with no free clinics, hospital advantages rare, and almost no protection from local boards of health. In attempting systematic prenatal care under such conditions, State Boards of Health might well establish classes for mothers in rural schools and for expectant mothers by itinerant nurses. County Health Associations, coöperating with county clinics or hospitals, and local committees, should establish efficient systems of medical, nursing and social service through the county, as recommended in Dutchess County, for example, by the New York Committee on Hospitals of the State Charities Aid Association '13.

The American Red Cross Society is attempting to develop a system of visiting nursing in the neglected country areas, through its Department of Town and Country Nursing, directed by a special committee, coöperating with local committees. After a short training with certain associations, on a limited loan fund, nurses are provided to care for the sick, instruct and demonstrate in rural communities. Eventually the country should be districted throughout for graduate visiting nurses. Water's revised study '09 of approximately 600 district nursing societies, showed only 140 representing 166 nurses doing rural work.

A questionnaire study of 70 rural nurses in 23 different states for a Committee of the National Organization for Public Health Nursing is reported by Clement '14. In these rural communities, manufacturing is the principal industry in 35, farming in 12, mining in 6, lumbering in 3. The population is almost invariably scattered, with an estimate of 6-10 square miles per nurse. Fifty-eight were general visiting nurses, practically all restricting service on a case from 1 to 1.5 hours. Less than 30 took normal confinement cases; in other communities such patients were cared for by relatives, neighbors, practical nurses, midwives or doctors. Confinement cases in

most rural nursing communities have "not yet been adequately provided for." The rural nurse should receive special maternity training, being often called upon to deliver because the doctor fails to arrive. Clement estimates that some two-thirds of rural nurses make prenatal visits, which is perhaps rather high. Group mothers' meetings or classes of younger women are urged to report a pregnant condition. Twenty of the 30 Red Cross nurses doing this general work report on prenatal care. Their work should be supplemented by inexpensive domestic helpers to relieve prospective mothers of the heaviest household duties.

Two types of rural care are differentiated by Crandall. The work may be limited to acute illnesses and obstetrical cases in isolated sections, such as the mountains of North and South Carolina, Virginia, Kentucky, Tennessee and Pennsylvania. The pioneer work of Miss Holman in Ledger, Mitchell County, North Carolina, promoted by the Holman Association of Baltimore, is here typical. Or at Hindman, Knott County, Kentucky, for example, the Women's Christian Temperance Union Settlement sends a nurse on long rides through the mountains. In Virginia, the St. James Mission, for example, at Lydia, Greene County, with its small hospital of 5 beds and nurse, or the Mission Home, Albemarle County, are headquarters for large mountain mission work. Or somewhat similarly, at Frogmore, St. Helena Island, South Carolina, a nurse includes in her visits and weekly mothers' meetings, the neighboring islands.

Or, again, groups of small villages may unite to support 1 or more visiting nurses. For example, the District Nursing Association of Northern Westchester County, New York, at Mt. Kisco, districts its various villages, and utilizes both carriage and railroad. Or, again, the Danbury (N. H.) Church Settlement Association, covering a scattered rural district with several villages, has a small complete country hospital with dispensary. Such a plan would combine a cottage hospital and diet kitchen with the rural visiting nurse. The Grand View Hospital at Sellersville (Pa.) represents a rural experiment in medical coöperation by rural physicians through the North Pennsylvania Clinical Society as part of a definite movement. This hospital covers a thickly settled agricultural district of about 200 square miles, 8 towns, and is for persons of moderate means. It includes a training school for rural nurses, and an open staff. The Lakeville (Conn.) Visiting Nursing Association is a typical organization, receiving calls from nearby villages by carriage; similarly, the Middletown District Nursing Association. Or at Simsbury (Conn.) the

Visiting Nurse Association covers by carriage a rural district of 12 small villages, including of course obstetrical cases. Or, again, the Rockland County District Nursing Association includes Nyack, South Nyack, Grand View and Piermont, New York; or the York (N. Y.) Nursing Society covers a rural community of some 12 villages; or the District Nursing Association of Southeast (N. Y.) includes Brewster and a number of other villages. Or in New Jersey, for example, the South Orange Society for Lending Comforts to the Sick visits neighboring villages; or the Bernardsville Visiting Nurse Association includes some 20 square miles with various small villages.

These nursing systems may be promoted by the most varied agencies. Thus the Pennsylvania Rural Progress Association promotes Muncy's rural visiting nurse in farming and hill country '13. The Visiting Nurse Association of Baltimore has 8 rural nurses in Maryland '13. At Berlin (N. H.) the Berlin Mills Company supports the Instructive District Nursing Fund. Pupil visiting under the Trull Hospital Aid Association in Biddeford and Saco (Me.) receives state aid. Or, again, the University of Wisconsin is rapidly developing rural community welfare, with lectures and demonstrations, and an investigation which showed rural physicians inefficient, no trained nurses or good practical nurses and domestic helpers and pregnant women with washing, scrubbing, cooking and other housework.

The dimensions attained by visiting nurse work in urban communities show it to be one of the most powerful modern agencies. That of 566 nursing centers, 98 are under the department of health and 22 under that of education, shows the municipal nurse is evolving as an essential factor. Schneider, in his recent survey '13 of municipal health departments, found in 201 cities, 22% made no effort whatever toward infant mortality prevention. Of the smaller cities, 33% had no plans for infant hygiene, of cities from 100,000-300,000, 69.2% have the essential features of a complete program; cities of over 300,000, 94.4%. West '14 found various municipal boards of health either affording direct prenatal care or coöperating with private associations, with its extension prevented chiefly by lack of funds. The Boston Division of Child Hygiene, for example, believes prenatal care an important function of government, and since 1911 has supervised over 1,200 expectant mothers. From June '11 to December '12, for example, there were 885 prenatal cases, 1,716 visits; from January '13 to October, 223 cases, with monthly visits. The city is districted, under 10 nurses ('12), and a prenatal

leaflet issued. Buffalo invites its expectant mothers to the milk station for advice. Cleveland '11 organized its Bureau of Child Hygiene, coöperating under 1 director with the Babies Dispensary and Hospital. Talks are given by the supervisors to conferences of mothers at the Prophylactic Babies' dispensaries under the Cleveland Congress of Mothers. Every pregnant woman unable to afford a private physician is referred under definite arrangement to a local maternity dispensary with prenatal visiting nurse and dispensary examination and control. The Detroit Department of Health indirectly coöperates. The Duluth Health Department provides prenatal care through a special nurse; and similarly in Erie the board's infant welfare nurse handles prenatal cases. The Fall River Board of Health aids all agencies doing prenatal work by organized coöperation, visiting each home with an infant death or birth in poor condition for 2 years or until the mother is again pregnant. The Jacksonville board pays the salary of a nurse under the Infant Welfare Society. Los Angeles is developing prenatal care through its Division of Child Welfare (with some 7 nurses). Similarly, the Division of Child Welfare of the Milwaukee Health Department does direct prenatal work; at 3 of its stations, classes for mothers are held. Milwaukee '12 first developed the educational district health center, covering an area of 33 city blocks, with partial prenatal care. In Nashville, the health department, through the milk dispensaries, if necessary, furnishes nurse, physician and all accessories for confinement. New York is now developing prenatal care through its Bureau of Child Hygiene '14, following the New York Milk Committee standards. Eight nurses cover 8 milk station districts, a pamphlet is issued, and, according to West, 963 mothers have been reached. Coöperation with practically all other agencies is secured through the Babies' Welfare Association of some 80 coöperating infant welfare agencies. The Newark Division of Child Hygiene gives early medical supervision, and reached 245 mothers '14. In Philadelphia, the Division of Child Hygiene is developing prenatal care, including diet instruction and provision for relief from overwork before confinement. As early as 1911, some 1,500 cases were visited. As in New York, cordial coöperation with other agencies is secured through a Babies' Welfare Association of 86 organizations. In Pittsburgh, school nurses of the Bureau of Child Welfare visit the mother before child-birth. The Providence board coöperates with private agencies, and has issued a prenatal pamphlet. School nurses of the Rochester Health Bureau do slight prenatal work. The Richmond Health Department

'10 is developing prenatal care to a limited extent, and finds it very successful.

Prenatal work in general is still upon a voluntary basis, largely supported by the unpaid services of nurses and physicians. A questionnaire study by the Committee on Nursing '13 of the American Association, found only 7 in 25 organizations specializing in infant work, with prenatal care. But West '14, in her study for the Children's Bureau, found more than 50 private organizations in prenatal work, in some 40 cities, in 20 states, while many further agencies coöperate. The largest lying-in hospitals with their dispensaries and outpatient services include prenatal care as a matter of routine, as in the Boston Lying-in Hospital, the Chicago Lying-in Hospital, the Cleveland Babies Dispensary and Hospital, the Sloane Hospital for Women, and the New York Lying-in Hospital, or the Milwaukee Free Dispensary and Hospital. This is also true of the larger visiting nurse associations, as in Boston '01, Chicago '06, Buffalo '09. Definitely pledged to prenatal work as an object in itself are the associations of Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dayton, Detroit, Elizabeth, Fall River, Milwaukee, Minneapolis, New Haven, New Orleans, New York, Newark, Orange, Providence, South Bend, Washington, and York. This tendency to include prenatal care in the work of lying-in hospitals and dispensaries, visiting nurse associations, infant welfare associations under many names, diet kitchen associations, settlements and churches, is ramified by coöperation with various charitable agencies, missions, churches, settlements, milk stations, school centers, women's clubs, fraternal orders, or life insurance companies.

In Alabama, for example, the Infant Welfare Society of Birmingham '14 gave prenatal care to 27 mothers. In California, for example, the University of California Hospital '13 gave prenatal care to 256 mothers, with 564 visits; and has issued several leaflets in various languages. The early detection of albuminuria in 16.6% of these cases enabled excellent results in all with conservative treatment. In Connecticut, the Infant Welfare Association of New Haven '12, coöperating with the obstetrical clinic, supplies prenatal care to as many mothers as its income permits. Through nurses of the Visiting Nurse Association some 75 mothers are reached with fortnightly visits for 5-6 months. The Visiting Nurse Association of Waterbury plans similar prenatal work. For the District of Columbia, the Instructive Visiting Nurse Society '13, through 2 nurses, gave prenatal care to 73 mothers, with a weekly clinic, using a milk station as consultation bureau

and a hospital for out-patient service. The Woman's Clinic Auxiliary '13 conducts a clinic for actual and potential mothers, with advice for expectant mothers, by a staff of 10 women physicians. Prenatal care is given both at the clinic and in the homes, including a visit by a staff physician and examinations at regular intervals. This out-patient maternity department aims to reach the lower middle class above aid from the Associated Charities. The Associated Charities prevent the expectant mother from overworking by supplementing the income or adjusting domestic relations, supplying nourishing food if necessary. In Florida, for example, the Infant Welfare Society of Jacksonville commenced prenatal work in 1912.

In Illinois, the Infant Welfare Society of Chicago, although with no organized prenatal work, provides prenatal instruction to expectant mothers with whom its 9 nurses ('14) come in contact. The Mary Crane Day Nursery does prenatal work for women of the Hull House Neighborhood, including classes in sewing and otherwise preparing for the baby, as early as 1908, caring for 21 mothers. The Visiting Nurse Association of Chicago provides prenatal care in its routine. Prenatal work among the hospitals and dispensaries is very small, although some instruct in diet and complications, while several social service departments seek favorable conditions for the poor during the later weeks. Important antenatal care, however, is given at the Chicago Lying-in Hospital's dispensary, with over 2,000 cases, and its branches at Provident Hospital (colored) and in the stockyards district. Instructions are in various languages, the women are examined for abnormalities, and cared for by social workers.

In Indiana, the Children's Aid Association of Indianapolis does very little prenatal work as yet, though its 4 nurses ('13) are instructed to advise pregnant mothers in the more congested districts, usually after the third month, and the Association will furnish milk during pregnancy. The Children's Dispensary and Hospital Association of South Bend consider prenatal care an important factor in reduced infant mortality, and in '12 cared for 18 mothers, in '13 for 91, in '14 for 131. Mothers are encouraged to report early, followed by weekly calls through the nurses. In Kansas, the Topeka Public Nursing Association '14 is developing prenatal care. At Lexington, Kentucky, the Babies Milk Fund has definite plans for prenatal instruction, in coöperation with the excellent obstetrical service of a local hospital. In 1914, the Babies Milk Fund Association of Louisville, Kentucky, opened an obstetrical clinic in connection with the University of Louisville, with home visits by a prenatal nurse every 10-14 days to teach the hygiene of pregnancy and direct the preparation. Staff physi-

cians (5) visit at the nurse's request, and deliver the case assisted by a student and nurse. The first year showed 42 deliveries, with 1 stillbirth, 2 miscarriages, and no eclampsia, cases having averaged 3.4 months of prenatal care. The Child Welfare Association of New Orleans, Louisiana, finds its prenatal work '12 most valuable.

In Maryland, the Council Milk and Ice Fund of Baltimore, which reaches about 400 families in all branches of infant welfare work, includes prenatal care. The Maryland Association for the Study and Prevention of Infant Mortality (Babies Milk Fund) of Baltimore finds prenatal care a "most important form of welfare work." Since 1910, its (9) nurses visit expectant mothers registered in the (4) large obstetrical clinics. Of 827 prenatal cases, February to September '13, with 565 delivered, 486 infants were living at the end of 1 month (24 deaths, 3 premature, 34 stillborn, 13 miscarriages). West lists 2,295 mothers as reached. The most recent experiment of this Association was in providing prenatal and skilled obstetrical care in a community of some 6,000 at Locust Point, the majority wage-earners (\$9-\$12 weekly), and remote from hospital centers or similar agencies. In 1914, as a substitute for poorly trained physicians and unskilled midwives, an obstetrical clinic with one woman physician was equipped. Mothers are urged to register early, a preliminary examination by the physician is followed by others, and hospital care urged if there are abnormalities. The prenatal nurse instructs every 10 days, examines the urine monthly, and every 10 days after the 8th month, and makes all arrangements for confinement. Members of the Mothers' Auxiliary of the Parents and Teachers Club take turns in looking after the house; and if a caretaker is necessary, a former household arts pupil of the Francis Scott Key Public School is recommended, and paid from the club funds or by the Federated Charities.

In Massachusetts, similar to the prenatal clinic of the Boston Lying-in Hospital, the Massachusetts Homeopathic, for example, gives prenatal instruction with regular visits by the nurse through its out-patient department. In 1913, the Instructive District Nursing Association, "recognized as one of the most efficient nursing organizations in the world today," supervised 1,966 cases in coöperation with the Division of Child Hygiene, which limited its prenatal nursing to 83 cases. Among the settlements, the South End House, for example, has classes for mothers, and to a certain extent seeks to educate the father. According to West, the Committee on Infant Social Service has cared for 1,512 mothers, the Boston Lying-in Hospital, 1,377; the Division of Child Hygiene, 1,238; the Instructive District Nurse Association, 870. In Fall River,

prenatal care is provided by the pregnancy clinic of Union Hospital and the District Nursing Association; and, similarly, by the associations of Holyoke, Pittsfield and Springfield. The Holyoke Infant Hygiene Association '14 reached 70-80% of the mothers, previously but 20-30%. The Springfield Baby Feeding Association '14 gave prenatal care to 202 mothers with visits every 14 days for an average of 4-5 months. The average weight of 106 babies born was 7 pounds, 6 ounces. In Worcester '14, the visiting prenatal nurse of the Association cared for 127 cases, with 629 visits.

In Michigan, the Battle Creek Sanitarium, through its training school for nurses, affiliated with the Chicago Children's Hospital, instructs several months before confinement, with prenatal care through the dispensary visiting nurse. Prenatal work is part of the routine of the Visiting Nurse Association, Detroit, sending a special nurse to maternity cases, with instruction in the homes. Pregnancy clinics are operated in connection with milk stations. The Clinic for Infant Feeding, Grand Rapids, through its auxiliary, the Wet-Nursing Guild, advises expectant mothers reached through its infant work. In Minnesota, the Minneapolis Infant Welfare Society gives weekly prenatal instruction to mothers by the physician at the Association Dispensary. Cases from visiting nurses and the obstetrical department of the University Hospital are under care for about 3 months, with visits twice a month by the nurse. In Missouri, the St. Louis Visiting Nurse Association includes prenatal care in its routine. In 1911, 572 maternity cases were cared for with only 3 deaths, 230 were visited before confinement, the majority at the 6th-8th month. The obstetrical department of Washington University, coöperating with the St. Louis Children's Hospital, follows cases from early pregnancy until 1 week after birth, through prenatal nurses from its social service department. The Infant Feeding Conference of the St. Louis Pure Milk Commission has successfully included prenatal work, by nurses in the homes, for more than 4 years. In Manchester, New Hampshire, 6.6% of the confinements were delivered through the obstetrical department of the District Nurse Association, utilizing the younger physicians, after nursing care. At Berlin and Concord, for example, the Visiting Nurse Associations afford prenatal care. In New Jersey, the Visiting Nurse Association of Elizabeth, according to West, cared for 76 pregnant mothers; while the General Hospital has a prenatal clinic attended by a nurse. In Newark, the Maternity Aid Society, Visiting Nurse Association and various relief societies coöperate. Or, again, the Diet Kitchen of the Oranges gives

prenatal care '14 through its nurse, visits every 2 weeks, for about 6 months.

In New York, Auburn is starting prenatal work. At Buffalo the District Nurse Association '13-'14, cared for 780 pregnant mothers. In New York, the Association for Improving the Condition of the Poor affords careful prenatal instruction through its Bureau of Educational Nursing to mothers in families under its care. The New York Diet Kitchen Association '14 gives prenatal care to mothers in their 8 milk station districts, interviewing many cases weekly at the station, and all every two weeks, for an average of 5 months, in all, 620 mothers. The Henry Street Settlement nurses, for example, maintain a separate staff for obstetrical cases. In the out-patient department of the Rochester General Hospital prospective mothers may receive free prenatal instruction, while a prenatal nurse is furnished by private philanthropy. According to Goler, material aid was given in 21 cases, and of 522 cases there was but 1 maternal death. In Syracuse, the Infant Welfare Association '14 has made a start in prenatal work, including milk to 15 expectant mothers, and frequent visits to 97. The Baby Welfare Committee of Utica commenced prenatal work '13 through the regular milk station nurse, visiting 116 expectant mothers every two weeks, for 1,089 calls, and referring to a physician or the obstetric clinic of the Utica Dispensary.

In Ohio, the Cincinnati Maternity Society, coöperating with the Visiting Nurse Association, furnished excellent prenatal care to 92 mothers. In Cleveland, the Babies' Dispensary and Hospital coöperates closely with the Bureau of Child Hygiene. The Columbus Instructive District Nursing Association includes prenatal instruction in its routine, and arranges for confinement. For 9 months, '12, about 175 pregnant mothers were supervised. The Visiting Nurse Association of Dayton, according to West, supervised 92 mothers. This association writes, "Among working mothers we can do little about work and sleep, but accomplish something in regulating diet and bowels, in increasing consumption of water, and especially in driving out the midwife, and getting patients to hospitals for delivery, or arranging for proper care at home."

In Pennsylvania the Johnstown Associated Charities 14 coöperated in a small amount of prenatal work by the district nurse of the Civic Club. In Philadelphia, the Starr Center is developing classes for mothers. The Child Federation, with special medical, nursing and investigating staffs as occasion demands, has established a health center, with 3 nurses and 3 physicians, in the Italian section, and maintains prenatal lectures, examinations and home instruction. The Babies Hos-

pital has established prenatal clinics, and also classes for mothers and fathers. Prenatal work was commenced through the Phipp's Institute '14, reaching about 600 mothers in various ways. Tallant cites the out-practice of the Woman's Medical College of Pennsylvania as providing woman physicians for the crowded foreign quarter, with only 3 maternal deaths in the last 2,500 cases, and a gross mortality from stillbirths of but 2.3%, as compared with 5.3% in all Philadelphia '11. The Pittsburgh Maternity Dispensary '13 finds prenatal care indispensable, correcting abnormal positions of the foetus, providing preventive treatment of the toxemias of pregnancy, and the timely discovery of abnormalities and complications. The York Visiting Nurse Association similarly finds prenatal care of "inestimable value." In 1914, 30 mothers applied to the nurses for prenatal care, supplemented through talks by local physicians.

In Rhode Island, the Providence District Nursing Association '14 commenced prenatal work for from 2-7 months through its six baby welfare nurses, about 60% of the cases being reported by the Lying-in Hospital. In Vermont, Brattleboro has solved a typical town problem through a health center directing nursing and household care by its trained nurses and domestic helpers, while coöperating with local physicians. At Burlington, for example, the University Hospital and out-door service includes frequent antepartum visits by students; in the pregnancy clinic, the patient returns every 4 weeks until the 7th month, then every 2 weeks. In Milwaukee, Wisconsin the Infants' Home and Hospital will soon develop prenatal work. The Milwaukee Maternity Hospital and Free Dispensary Association considers systematic prenatal instruction and treatment "probably more important than intelligent care of the mother during labor." The first visit involves a thorough physical and obstetrical examination, abnormal positions are remedied, and toxemia anticipated; in impending toxemia, the patient is visited daily. In more than 1,000 registered cases, there has been no eclampsia. This hospital coöperates, for example, with the Associated Charities, Society for the Care of the Sick, and Visiting Nurse Association.

Prenatal care may be nullified by poor obstetrics, and the two are interdependent. Failure to meet the obstetrical problem may result in two deaths, or partial invalidism; and yet present obstetrical conditions are "a national scandal upon the medical profession." According to Williams, only three lying-in hospitals (New York and Pittsburgh) are what they should be physically. This opens another subject, however, which must be postponed until later.

## THE OLD SYSTEM OF CHINESE EDUCATION

By PING LING

In compliance with President G. Stanley Hall's request, the following pages represent an endeavor to describe the old type of Chinese education in its unmodified form and with particular reference to the experience of the writer's childhood. The subject thus assigned to me is very vast in its nature and there are so many points of interest that I can hardly touch at all in a brief paper like this. What I propose to do here is to describe some of the salient features of this unique and antiquated form of education which I have actually experienced myself.

In order to understand the old system of Chinese education, there are two things which we must bear in mind. The first is that there has been a genuine intellectual aristocracy in China, and this was particularly true before the Republic. Under the imperial form of government the learned men were more highly rewarded and respected in China than in any other country which I know of. We had no caste system in China as you find it in India. Any one could expect to hold the highest political position of the country, if his scholastic achievement warranted such a reward. The successful students of literature usually became political officers of great importance and thus assumed complete control of the organization and direction of social life. The whole governing class was composed of scholars in politics, and we can hardly find a better example of practical Platonic philosophy—that is, philosophers should be rulers, and vice versa—than the political system of China under the old regime, although the Chinese conception of a scholar was different from Plato's conception of a philosopher. This explains the reason why the Chinese people have always respected learning and education even though the government paid no attention to public education until the beginning of the present century.

The second thing we should bear in mind in this discussion is that the aim of the old system of education was to crush individuality and to recapitulate the past in order to maintain social stability and tranquility. The chief policy of the Chinese government under the dynastic rule was to prevent change, so the aim of the old education was to inculcate in the individual

the habits of thought and action identical with those of the past without developing any ability to modify the existing institutions or to adjust himself to new conditions. Thus one of the ancient philosophers tells us: "Fill the people's bellies and empty their minds; cause that they neither know nor desire anything, and you have the secret of a tranquil government." To a very great extent the imperial government of China had succeeded in carrying out this philosophy through its indirect control of education. Furthermore, China has a very long and glorious history of her national life, so the Chinese people were very prone to look back to the past for political and social inspiration instead of looking forward to the future. This tendency may furnish us the key to explain the many phases of Chinese religion, philosophy, education and the very foundation of Chinese social life.

With this brief preliminary remark we may now describe the old system of Chinese education under the following rubrics: namely, its organization, content, and method, the examination system, and finally its results.

*Organization*—The institutional organization of the old Chinese education was a very simple one. There was no diverse system of elementary schools, high schools or college. The only kind of school we had was a village school taught by an unsuccessful candidate for the degrees and attended by a half dozen or more pupils in the village. Education with the Chinese was entirely a private affair. Public schools supported by taxation and with compulsory attendance did not exist until very recently. The education of the children was left to the parents. A wealthy family may have had a school of its own. Poor families either sent their children to the family schools of their wealthy relatives or had a common village school supported by private tuition. It is to be remembered that such elementary schools were found practically in every village.

With regard to school-houses, there were none to speak of. School was kept in any vacant room of a private house, of an ancestral temple or of a public building. For example, the school-house in which the writer stayed for many years during his early childhood was a fairly large room with muddy floor and thatched roof. The walls were made of sun-dried clay. There were two small windows on one side of the room which constituted the only means of lighting and ventilation. Heating was unknown, nor was there any facility for heating the room in the winter. During severe weather frozen hands and feet were of common occurrence. Both the master and the pupils bore the suffering with surprising fortitude.

Generally speaking, the most interesting and important thing in the life of a Chinese child was the commencement of school life. When a child reached his sixth or seventh year, his long years of school life began. The almanac was then consulted, and a lucky day chosen for inducing him into a life of study. Clad in festal robe, he was sent to a village school. On entering the room, he had to perform two acts of worship: the first was to prostrate himself before the tablet of Confucius, and the second was to salute in the same manner the teacher who was to guide his inexperienced feet in the pathway of knowledge. Usually this occasion was one for feasting, in which all the close relatives of the child were invited to participate. After the commencement exercises the child began his long years of confinement. School days were long and holidays were few. He had to go to school very early in the morning and come out very late in the evening. He devoted all his time to learning and had no time for rest, except the meal hours. Indeed, the task to be accomplished was so tremendous that there was no time left for play or amusement.

Another interesting thing in the old Chinese school system was the extraordinary social position occupied by the teacher. In no other country was the office of teacher more revered. Not only did the living instructor command the profoundest respect, but the very name of teacher, taken in the abstract, was an object of worship. On the family tablet, on which the five objects of veneration were inscribed, the word "teacher" was placed in connection with the characters of heaven, earth, sovereign, and parents. I will not be surprised if this ancient custom can still be found in the rural districts of to-day. In a word, the teacher's position in the society was one of honor and influence. To be sure, teaching was not a remunerative profession in China, yet the meagre pay of a teacher was more than compensated by his exalted social position.

*Content*—The content of the old Chinese education was very restricted in its nature. Literature was the first and the last thing which a child was expected to master. When a child entered school he was first given the task of memorizing from four to five hundred different characters. As we all know, the Chinese language is ideographic. Every word represents an idea and has its particular form and strokes. There are no alphabets, so there is no "short-cut" in learning the characters. The task of memorizing several hundred of them for a child of six or seven is nothing but prodigious. Strange it may seem that a bright child can finish this tremendous task within a very short time. After the completion of this work,

the child was then given a remarkable primer, the Trimetrical Classic, to read. The subject matter of this primer consists of discussions on philosophy, ethics, religion, education, political science, history, and geography. All sentences are composed of three words each and beautifully rhymed. To give some idea of this wonderful book, the opening lines translated by Dr. Williams may be quoted:

“ Men at their birth are by nature radically good :  
Though alike in this, in practice they widely diverge.  
If not educated, the natural character grows worse :  
A course of education is made valuable by close attention.  
Of old, Mencius’s mother selected a residence,  
And when her son did not learn, cut out the (half-wove) web.  
To nurture and not educate is a father’s error :  
To educate without rigor shows a teacher’s indolence.  
That boys should not learn is an unjust thing :  
For if they do not learn in youth, what will they do  
when old ?  
As gems unwrought serve no useful end,  
So men untaught will never know what right conduct is.”

After the primer, the study of the Four Books was in order. Judging by the content and the influence upon Chinese civilization, these four books are often called by the western writers the “Chinese Bible.” The following passage may be quoted as an illustration :

“ What the Great Learning teaches, is—to illustrate illustrious virtue ; to renovate the people ; and to rest in the highest excellence.

“ The point where to rest being known, the object of pursuit is then determined ; and, that being determined, a calm unperturbedness may be attained to. To that calmness there will succeed a tranquil repose. In that repose there may be careful deliberation, and that deliberation will be followed by the attainment of the desired end.

“ Things have their root and branches. Affairs have their end and their beginning. To know what is first and what is last will lead near to what is taught in the Great Learning.”

These quotations may give the reader some idea about the kind of material which an ordinary school pupil had to memorize. But we must also remember that memory was the only thing required at this stage of education, and nothing else. After the Four Books, the study of the Five Classics was the next in order, and here memory again. For an average child, the memorizing of the Four Books and the Five

Classics would require about five or six years of constant "grinding." As a rule, such memory work was so thoroughly done that the child could repeat these nine sacred books from cover to cover. When we remember that these nine books in their unabridged edition are greater in bulk than the Old and New Testaments, we may easily imagine how tremendous would be the task of memorizing them.

After this memory work, the practice in the art of writing would begin. In order to familiarize the pupil with the different styles of writing, hundreds of poems, prose essays, and historical commentaries were also to be studied and memorized. However, in this stage, composition work was the leading object, reading being entirely subsidiary. This form of education might continue for years before one could pass the first competitive examination which will be described in a later section of this paper.

*Method*—With regard to the method of the old Chinese education, there is scarcely anything more to be said. Memory was the Alpha and Omega of the entire system of instruction, and everything was carefully adjusted to this end. Teaching was absolutely an individual affair. The teacher could only take care of one pupil at one time. When a child first learned to read, the teacher usually read to him the assignment in the text many times until he got the correct pronunciation of the words and the proper articulation of the sentences. Then he would go back to his own seat and study the assignment by reading aloud. Here we may notice that loud reading did help the memory to a very great extent. After he had learned the lesson by heart, he would hand the book to the teacher, turn his back, and recite the passage at the highest attainable speed. Then a new lesson would be given and the same process was repeated. The whole system of instruction was just as unique as it was humorous.

Another interesting feature of the method of instruction was the constant application of corporal punishment. The western proverb—"spare the rod, spoil the child"—was literally carried out to its absurd extreme. Sometimes punishment was inflicted merely for the sake of punishment. As the classical primer says: "To educate without rigor shows a teacher's indolence," so not infrequently the teacher's professional fitness was judged by his ability of inflicting pains. Indeed, the rod was considered as the only means to make the child learn. Inability on the part of the child was identified with inattentiveness, so failure to accomplish the assigned task within a certain time-limit was often a cause for merciless punishment. Take a concrete case. At the age of nine, the

writer failed on one occasion to reproduce a long passage of classic literature in its exact order. For this failure he received a severe blow which broke his head on the right side. This stunned him for a few minutes, and when he regained his consciousness he went home with a face covered with blood. Yet his good parents uttered not a single word against the teacher for such a brutal act, because, according to the custom, it was perfectly within the teacher's legitimate right to do so. Had any investigation been made with regard to the cases of death and permanent injury among the school children caused by this single factor, we might have a very interesting story to tell.

*The Examination System*—I have given a rather brief sketch of the old Chinese education with particular reference to its organization, content, and method, we may now turn our attention to the famous examination system which had existed for many centuries before it was finally abolished in 1906. As I have said, the Chinese government had paid no attention to public education in the way of financial support, supervision or direction until the beginning of the present century, but it did encourage purely intellectual culture and it did so in a most effective manner by testing attainments and rewarding exertion, namely, the system of competitive examinations. Through these examinations the different degrees were conferred upon the accomplished scholars in literature, and only through the success in these examinations could a learned man expect to achieve political prominence. In a sense, these examinations were comparable, though not identical, with the civil service examinations in the western countries, because no one could hold any official position unless he possessed a degree, and no one could have a degree unless he could show his brilliancy and accomplishment in the examination halls. We can not understand the Chinese education nor the Chinese political organization in the past without having some idea of this unique institution.

First of all, let us take a general view of this examination system. The degrees granted on the basis of competition were four:

First—Hsiu Tsai or “Flower of talent.”

Second—Chu Jen or “Promoted scholar.”

Third—Chin Shih or “Fit for Office.”

Fourth—Han Lin or “Member of the Forest of Pencils.”

The first of these was sometimes compared to the degree of B. A., the second to M. A. and the third to Ph. D.; while the fourth merely indicated the membership in the Imperial Acad-

emy and this honor was conferred on the basis of good penmanship. Indeed, we have no right in drawing this comparison between the Chinese degrees and the degrees conferred by the western colleges and universities, because the resemblance between them is so slight. Chinese degrees were conferred by the State, without the intervention of school or college; they carried with them the privileges of official rank; and they were bestowed on a very small percentage of those who entered into the competition. The first degree was conferred by the provincial chancellor who was required to visit every examination district in the province every other year and hold examinations for this purpose. The successful students, usually about one per cent. of the candidates, were decorated with the insignia of rank and were bestowed with all the privileges and immunities pertaining to the degree. The trial for the second degree was held in the capital of each province once in three years. The examination was conducted by a special commissioner sent from Peking, and consisted of three sessions of three days each, making nine days of almost continuous exertion. Usually about one per cent. of the candidates was selected for the honor. Then the second degree men would proceed to the national capital to take the examination for the third degree, and success in this would mean an admission to the candidacy of civil office. But they were not assigned to any special office until they passed two other special examinations held within the palace and presided over by the emperor himself. The most successful candidates of these examinations would receive the fourth degree which carried with it the highest distinction of scholastic attainment.

Such is the general sketch of the whole system. We may now take a closer view of some of these examinations as they were actually conducted. The writer had the privilege of taking the examinations for the first and second degrees in his early teens. It may not be entirely out of place here to describe some aspects of this experience very briefly.

The examination for the first degree consisted of three stages. The first stage may be called a district examination conducted by the chief officer of the district or *hsien*, a territorial division which corresponds to a large county in this country. About two thousand competitors took the examination, ranging in age from the precocious youth just entering his teens up to the venerable old man of three score and ten. Usually in the very early morning the gate to the great examination hall was opened and the competitors were admitted one by one, and received their examination papers as they went

in. Shut up for a whole day they each produced two essays on certain given subjects, and then went to their homes to wait for the bulletin announcing the result. As a rule, the unfit were eliminated the first time and the successful students were ranked according to the merit of their examination papers. Then a second test would be given, and more would be eliminated. This elimination process might be repeated from five to seven times until only a few hundred competitors were left. Thus ended the district examination. After a month or so, a second examination would be given. This was usually conducted by the chief officer of the prefect, and the same process was again repeated. Immediately after this, a final test conducted by the provincial chancellor was held. The chancellor, assisted by his clerks, spent several days in roughly looking over the manuscripts, from which he picked out some twenty or more that were distinguished in beautiful penmanship and literary style. The authors of these were honored with the first degree of "Flower of Talent," and for many people this was a sufficient compensation for many years of patient toil.

Once in every three years, these "Flowers of Talent" went to the capital city of the province to take the examination for the second degree. Thousands of competitors entered the trial, but only a few were chosen. As I have pointed out this examination consisted of three sessions of three days each. Every competitor was assigned to a special cell which is about six by seven feet in size. The entire furniture of the cell consisted of a few wooden boards out of which one might make a bed and something to write on. Food was supplied but was poor in quality and insufficient in quantity. Of course, every competitor was fully equipped with blankets and food of his own. Sanitary conditions were very bad and people of delicate health frequently succumbed. Shut up in such a cell, every competitor was required to produce five essays on certain given subjects in three days. The second and the third sessions simply repeated the same process. The subjects of this examination were higher literary criticism, history commentary, poetry, and discourses on current topics. It seems very strange that much good literature was produced in these examinations, even though the conditions in the examination-halls were very unfavorable for careful thinking and mental exertion.

The trial for the third degree was very much similar to that for the second, although the requirement was much higher and the test was much harder. The description of this examination will not be given here, because the writer had no experience in this.

So much for this brief account of the examination system, now just a word about its effect upon Chinese education in general. It has already been pointed out that this system was the chief means of selecting the best talent for the service of the public, but beyond this, its primary object was to encourage and to control the education of the people. It was very democratic in its nature, because it offered a fair opportunity to all, and every public officer had to earn his position by intellectual effort. It stimulated millions of ambitious students to study and to study with unabated zeal. It furnished a powerful motive for the people, poor as well as rich, to send their children to school, because only through education could they expect to better their social positions. If China did not produce many prominent men of intellect from the Western point of view, I rather think that it was due to the false standard of intellectual merit established in China, not to the fault of the competitive system. Many features of this examination system should be mercilessly condemned, but judging by its practical effect upon Chinese education, it did a great service despite its defects.

*Results of Chinese Education*—The results of the old type of Chinese education upon Chinese national life may be briefly stated as follows:

1. It produced a type of people who were conservative in temperament and preferred peace at any price. The policy of the Imperial Government was to prevent change, and it succeeded to a very great extent in accomplishing this aim through its indirect control of education.
2. It had over-estimated the value of purely intellectual culture and under-estimated the value of science. For centuries past, letters were everything and science nothing to the Chinese. They cultivated the power of retentiveness rather than that of invention. The practical side of education was entirely ignored. The Chinese people did not recognize the psychological principle that intellect is hand-made, so they always considered that manual training was incompatible with intellectual acquisition.
3. It produced physical deterioration among the educated class. Physical education received no attention whatever. For a school child, play was a disgrace and physical exercise was barbarous. Indeed, one's physical strength and vigor were in inverse proportion to his intellectual growth.
4. It emphasized moral education through training. Beside the mastering of the Four Books and the Five Classics which consist mainly of ethical precepts, the child was trained in moral conduct by both punishment and reward. This is one

of the best things which can be said about the old type of Chinese education.

In conclusion, it may be said that whatever were the defects and merits of the Chinese education, the whole system has died a sudden death. We are in the dawn of a new day. Indeed, it is not an exaggeration to say that we are in a period of renaissance of Chinese civilization. We have achieved a new birth in our political organization, and we are achieving a new birth in our educational system. Judging by the results, we probably have made more rapid progress along the line of modern education in the past two decades than any other country during the same period. The initial success is encouraging, and the final result can no longer be in doubt. Give us time, and I am confident that we will be able to work out our complete salvation in the near future.

## SOME HEALTH CONDITIONS EXISTING AMONG OUR HIGH SCHOOL GIRLS

By FLORENCE A. GATES

The problem of the health of the high school girl ought to be one of vital interest, but recent researches make one appalled at the meagreness of material on this subject. Medical inspection of children in the grades and health conditions among our high school athletes seem to be paramount in the minds of school authorities.

The question of responsibility for the health of these girls is a debatable one. School officials and teachers feel that the mother should be held responsible to a great extent, while the mothers in turn blame the schools for health conditions of their girls, and question ability of teachers to assume such a responsibility as caring for their girls. Walter Truslow,<sup>1</sup> John Tyler,<sup>2</sup> and Dr. Florence Richards,<sup>3</sup> who have studied this subject carefully, have offered the following as causes of poor health conditions among our girls: Great demands made on mental powers, pubertal changes, and lack of exercise and fresh air, while Dr. Robert Lovett,<sup>4</sup> who conducted a questionnaire among teachers of the high schools of Boston and vicinity, found that the teachers believed that overwork, late hours, social or household demands and injudicious food were the chief causes.

In making this investigation the writer secured data from over three hundred girls from all classes of the Waite High School, Toledo, Ohio, by placing in their hands a questionnaire. The points emphasized for their answers took up the subjects of age, their usual breakfast, tea, coffee and water drinking, habits, care of teeth, out-of-door exercise, home study, hours of sleep and prevalence of headaches, constipation and menstrual conditions.

<sup>1</sup> Walter Truslow. Exercise during Adolescence. *American Physical Education Review*. Vol. 3 No. 2 June 1898.

<sup>2</sup> John Tyler. Growth and Education. 1907 p. 162.

<sup>3</sup> Florence Richards. Hygiene for Girls. 1913

<sup>4</sup> R. W. Lovett. The Health of School Girls. *American Physical Education Review*. Vol. 7, No. 3, Sept. 1902.

The average age studied was nearly sixteen years, of which 6 per cent were thirteen years of age, 15.4 per cent fourteen, 24.6 per cent fifteen, 27.1 per cent sixteen, 15.7 per cent seventeen, 13.8 per cent eighteen and the remaining 2.8 per cent nineteen and twenty. Since the two extremes represented such a small number of girls, their data have, in most cases, been ignored.

While the high school studied has an excellent refectory, where balanced meals are served at a low cost, it is a question where the average adolescent girl there received the proper amount and kind of food needed at the noon lunch period. Tyler claims that 80 per cent of the food of the adult is needed by them, and with meagre breakfasts reported by so many and the small amount of food eaten by our girls at this lunch period, it is needless to say our girls in many cases are underfed. Too many depend on a cake of chocolate or dish of ice cream, when the body is calling for at least one hot meal of food. With the limited time at the disposal of the writer at lunch time, a close study of foods chosen by our girls could not be made.

However the matter of the breakfast of the high school girl was given attention. It was found that only 85 per cent of the girls we studied ate breakfast regularly, the ones denying themselves this meal being chiefly the younger girls, the habit reaching its climax at the age of sixteen. These girls were further questioned, and gave as their reasons, first, laziness in rising, and second, fear of growing fleshy. A close inspection of them showed a prevalence of the anaemic type, who, while showing classwork of a high order, lacked physical endurance and fainted easily upon overexertion.

When the breakfasts of the 85 per cent of the girls were studied, the fact was revealed that one-third of these girls were not eating either sufficient food or the proper kind for their morning meal. While it is difficult to draw the line, we consider the following menus submitted not well adapted to the well-being of our high school girls: (a) coffee or tea and toast; (b) coffee and crackers; (c) fruit; (d) a doughnut, fried potatoes and coffee; (e) hot water, bread and butter, two or three cinnamon rolls.

Dr. Hollopetter's investigations among Philadelphia school children as to breakfasts seemed to be the only available material for comparison on this subject, and it is interesting to note the extreme closeness of the compared figures in a number of instances. These figures naturally represent per cents.

<i>Food</i>	<i>Philadelphia</i>	<i>Toledo</i>
Coffee	58.0	39.5
Milk	15.0	15.9
Cocoa	11.0	16.6
Tea	11.0	1.7
Bread	69.0	
Rolls	4.0	75.2
Eggs	40.0	
Cereals	35.0	28.6
Potatoes	5.0	44.5
Cakes	18.0	9.1
Meat	9.0	4.2
Fruit	9.0	18.7
Etc.	6.0	4.0
Breakfasts inadequate		

Our Toledo report shows fewer drinkers of coffee and tea, fewer eating eggs, though the present prices may be the cause of this, a greater preference is shown for cereals and fruits. When the detailed study was made of the foods eaten at breakfast by our girls, the "squeamishness," using the words of Dr. Hall, of our sixteen-year-old girls was made apparent. These sixteen-year-old girls either ate no breakfast, or ate insufficient amounts. The younger girls ate the foods which give the body nutriment, heat and energy, while their sixteen-year-old sisters showed a preference for the fruits and stimulants.

Hoag claims that more than 50 per cent of our school children drink coffee, but this statement may have been based on Dr. Hollopeter's investigations. No data could be found on this habit as existing among high school girls. Our investigation showed that 57 of our fourteen-year-old girls drank either tea or coffee or both, 65 per cent of those of fifteen years of age, 64 per cent at both the ages of sixteen and seventeen and 57 per cent at the age of eighteen. The sudden rise in this habit appearing at the age of fifteen may be accounted for by the facts that the first year in high school calls forth an unusual amount of energy from the girl, the body is adjusting itself to new growth and developmental conditions and with these two in force, the desire for stimulants is apparent. The opposite condition holds true for the girl of eighteen.

The water drinking habit was deemed of sufficient importance for study, since in the adolescent body waste products of metabolism are rapidly formed and glands are excreting copiously. The amount of water required by these adolescents naturally varies, for weather conditions, conditions of the nervous system and certain foods would all affect the rate of excretion. A questionnaire recently submitted to a high school

class revealed the startling fact that at noon that day only 25 per cent had drunk any water.

Our study shows that at least one-half of our high school girls are not drinking sufficient water, five glasses daily being considered a conservative estimate needed by the average girl. The girls drinking the largest amounts are of the athletic type, belonging to the tennis and basketball teams. The number of those drinking insufficient water increased with age, and a sudden rise was noted at the age of eighteen. The majority under that age are taking elective or compulsory gymnasium, which shows their active life and its effects as opposed to the sedentary life of the eighteen-year-old girls. This habit of drinking little water along with more hours of home study shows its effect in the studies of headaches, constipation and painful menstruation.

Very little available data was found on the subject of oral hygiene of high school girls, though Dr. Florence Richards<sup>6</sup> reports that in the William Penn High School for Girls at Philadelphia, 10 per cent suffer from carious teeth. A questionnaire among 84 pupils of our high school in 1915, 71 per cent of whom were girls at an average age of 15.8 years, revealed that 40 per cent reported dental caries, 15 per cent had never visited a dentist, and 40 per cent had never had their teeth cleaned by a dentist. Ninety per cent, however, reported that they brushed their teeth at least once daily.

The questionnaire upon which this article is based, shows that 27 per cent of our fourteen-year-old girls have never visited a dentist. This number gradually lowers until at the age of seventeen we find it to be 12.5 per cent and raised to 16.5 per cent at the age of eighteen. Fully 50 per cent of these girls studied have visited a dentist within the past year. It is felt that the emphasis placed upon this subject in a laboratory course in Physiology and Hygiene for the younger girls in our high school has much to do with the lowering of the above rates. A corresponding necessity for emphasis along hygienic lines, as done in our large high schools for girls of the upper classes, is made apparent. While our figures are greatly in excess of those of Dr. Richards, it is felt that this may be due to the large number of these girls who come from rural districts or cities where medical inspection is lacking.

Truslow<sup>8</sup> says that two hours daily is little enough in the

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<sup>6</sup> Florence Richards. Physical Training with special Corrective Work and Hygiene in Girl's High Schools. *School Review*. March, 1914.

<sup>8</sup> Referred to in first part of article.

open air for our high school girls. Lovett<sup>7</sup> found that the girls in the Boston high schools averaged 60 minutes daily in the open air. It was learned from our study that the girls of our high school spent on an average of in out-of-door exercise one hour and twenty-four minutes daily, in addition to two hours a week daily in the gymnasium. Seventeen per cent of these girls spent less than one hour daily out of doors.

Lovett<sup>7</sup> and Truslow<sup>8</sup> fortunately also investigated the subject of home study among high school girls. Lovett found that girls of the high schools of Boston and vicinity averaged four hours daily home study, while Truslow is of the opinion that girls up to fifteen and sixteen years of age should not spend more than one hour out of school in study at home. Our high school pupils, with the exception of those who have failed in subjects the previous semester, or who are making up work lost by absence, or who are in need of additional help, are excused daily at one thirty. The study hours in school vary, but no regular student has more than ten study hours a week in school, and the two lowest classes at the time of this writing have no more than eight and some of these only two, much of their work being manual training and laboratory work in science. We found that the average time spent in home study by our girls was 2.7 hours, and that 22 per cent of our girls were spending four hours or more in study at home, which seems a longer time than the average adolescent should devote to this purpose.

When the subject of sleep of adolescent girls was looked into, a little more data was found. Dukes,<sup>9</sup> Warner<sup>10</sup> and Terman<sup>10</sup> have studied this subject, the two former recommending an absolute number of hours necessary, while Terman's recommendations come as the result of investigation of 1,012 Western girls. Our reports show a declining rate in the number of hours of sleep as the ages increased, but at all ages, less than those recommended by Dukes and Warner.

In every case we found our girls had longer sleep periods than the Western ones studied by Terman. Our girls of thirteen average 9.5 hours and the decline is gradual up to the age of twenty, where the average runs to 8.25 hours.

We found also that 15 per cent of our girls retired before nine o'clock, the majority of whom were fifteen years of age;

<sup>7</sup> Referred to in first part of article.

<sup>8</sup> Catherine Chisholm. *The Medical Inspection of Girls in Secondary Schools.* 1913. p 188. Figures quoted here are given by Dukes in Clifford Allbutt's *System of Medicine.*

<sup>9</sup> Stanley Hall. *Adolescence.* Vol. 1, p 263

<sup>10</sup> L. Terman. *The Hygiene of the School Child.* 1914.

that 32 per cent in addition retired before half-past nine, chiefly girls of sixteen years of age. Of those retiring after half-past ten, which was only 8 per cent, no especial age was noted. Using Warner's estimates as a basis, it was shown that one-half of our girls of fourteen and fifteen years of age received insufficient sleep, three-fifths of those at sixteen but only one-fifth to three-tenths over this age.

Chisholm in England examined 500 high school girls and reported 15 per cent suffered from constipation. Lovett's studies claimed that from 5 to 15 per cent of the high school girls were handicapped by constipation, biliousness and indigestion.

Eighteen per cent of our Toledo high school girls studied are troubled with constipation, and a study of their questionnaires showed that the probable causes are sedentary life, lack of exercise, late rising hours, insufficient water drinking and indiscretions in diet, such as going without breakfast or improper food. Only one-tenth of the girls of the ages of fourteen and fifteen complain of constipation, but an increase in the number with age is noticed. At the age of eighteen about one-fourth of our girls appear to be disturbed by this condition.

Key's study of Swedish adolescent girls states that 36.1 per cent suffer from headaches. Lovett in Boston found this number to be 30 per cent, while 37.2 per cent of our girls appeared to be distressed in this manner. As a cause Hall calls attention to changes in arterial pressure and specific gravity of the blood. Sachs cites numerous causes of headaches, the chief ones which might affect our girls being anaemia and malnutrition, eye-strain and auto-intoxication. Woods Hutchinson<sup>11</sup> claims that nine-tenths of the eye troubles, seven-tenths of all headaches and over half of all nervous disturbances, come from the eyes. Cornell states that 70 per cent of the older school girls who suffer from eye-strain also have headaches. Among the other causes of headaches of school children cited by authorities are infection of nose and throat, poor ventilation, fatigue, coffee drinking, menstruation and nervousness.

Of the 37 per cent of girls reporting headaches in this questionnaire, we find the number gradually increases with age, reaching its climax at the age of seventeen. A close study was made of these reports, and nearly 54 per cent of the above number complained of menstrual pains, 48.4 per

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<sup>11</sup> Woods Hutchinson. *The Girl and Her Headaches*. *Good House-keeping*, March, 1915.

cent are doing excessive home study which may cause eye strain, 43.9 per cent drink very little water, which may aggravate auto-intoxication, 31.8 per cent report constipation, 24.2 need dental treatment and 18 per cent eat no breakfast or very little. In one case it was noted that four cups of coffee and tea were drunk daily. In general, then, conditions increase with age. Below is found a table of comparison, the figures naturally referring to per cent.

Age	14	15	16	17	18
Constipation	11.1	10.8	16.1	20.8	24.3
Headache	34.7	37.3	38.3	46.0	36.5
Painful Menstruation	40.0	28.2	37.0	45.6	58.8
Insufficient water drinking	47.9	50.6	46.9	51.9	60.9

As to the appearance of first menstruation, our average is a trifle lower than that of other investigators, and this again may be due to the small number studied. Engelmann<sup>12</sup> found the average age to be 13.8 years; Lancaster<sup>13</sup> 13.6 years, Kennedy<sup>14</sup> 13.7 years, while Chadwick<sup>15</sup> and Currie<sup>16</sup> 14.5 years, all of these records being of girls in the country. Our Toledo high school girls reporting average 13.0 years. Six of the ages of fourteen and fifteen reported menstruation not yet established. In three cases puberty was reached at the age of ten, and in fourteen cases at the age of fifteen and none over that age.

It was difficult to obtain data as to the regularity and character of the flow. One peculiarity was noted, however, which fact might not be borne out had more data been obtained, i.e., practically all the girls who began functioning at the age of ten and eleven years, have menstrual period lasting about a week and in all cases they are of the pale and anemic type.

Authorities claim from 70 per cent to 75 per cent of girls report functional disturbances. Our reports show that menstrual pain is prevalent to a great extent at the age of fourteen, 40 per cent of the girls reporting it then, just when the body is adapting itself to the greater demands. This per cent drop at the age of fifteen and then we find a gradual increase as sedentary life becomes more established. At the age of eighteen nearly 60 per cent report menstrual disturbances.

Dr. Mosher<sup>14</sup> believes her sex to exaggerate their menstrual

<sup>12</sup> George J. Englemann. The American Girl of Today. *American Physical Education Review*. Vol. 6, Nov. 1, 1901.

<sup>13</sup> Stanley Hall. *Adolescence*. Vol. 1, p 475.

<sup>14</sup> Clelia Mosher. Functional Periodicity in Women and Some of the Modifying Factors. *American Physical Education Review*. Vol. 16, No. 18, 1911.

ailments and when asked as to pain are apt to describe the last period. Chisholm believes that lack of warm clothing, constipation and sedentary occupations are responsible for pain at this period. Dr. Mosher believes the pain psychic, but is aggravated by tight clothing and faulty hygiene. From several years' experience in caring for ailing high school girls, the writer believes that Chisholm's points are only too true, and at the present day cannot agree with Dr. Mosher that tight clothing can be considered a factor, as in only one instance of a few hundred girls cared for during the menstrual period or other minor ailments, has tight clothing been observed.

A common ailment of our high school girls is hysteria. The number of cases of hysteria and fainting appear to increase towards the examination time, excitement at times of athletic celebration, at menstrual periods and other occasions which tax the nerve energy of our girls. The modern high schools of today are providing for more consideration for girls at the menstrual periods. Lovett learned that at a high school near Boston, no girl need take her examinations at this period. The Los Angeles high schools<sup>15</sup> for girls have rest rooms with an abundance of couches for relaxation at this time. Our high school provides but two couches for several hundred girls, and especially ailing girls are allowed to use these and a hot drink and hot bottle are provided.

As has been evident, this investigation is hampered by lack of sufficient data, but enough has been secured to call attention to the following points:

- (1) Early home training as to diet, sleep habits, water drinking, use of tea and coffee, out-of-door exercise, care of the teeth, nose and throat cannot be too strongly emphasized.
- (2) The question of excessive home study needs investigation by proper school authorities and parents.
- (3) Constipation is altogether too prevalent and is preventable by heeding points indicated above.
- (4) The school should be more lax in its demands on a girl's vitality, especially during the menstrual periods. Adequate rest rooms should be provided and girls encouraged to use them.
- (5) A competent physical director, with the cooperation of a woman physician, is needed in every large high school. Corrective gymnasium work should be greatly emphasized.
- (6) Regular medical inspection of all girls should be required. The attendance of the girls' mothers at such an investigation should be sought.
- (7) A thorough course in hygiene should be taught with sufficient

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<sup>15</sup> Bertha L. Smith. *Mothering a Thousand Girls. Good Housekeeping*, December, 1910.

emphasis upon sex hygiene. Both should be given in all years of the high school, the kind of lectures being adapted to the age of the girls. (8) Every large high school is in need of a special adviser for the girls. A woman physician is to be preferred, and if such a one is not obtainable, a woman of broad sympathies, much experience and a biological training could aid. (9) Adequate emergency supplies should be on hand and convenient to the room, where sick girls are cared for. (10) Close supervision of a high school lunch room is necessary. (11) All teachers of high school girls should have studied courses in adolescence and hygiene. (12) All mothers and teachers of girls should always bear in mind John Tyler's saying, "Health comes in through the muscles and flies out through the nerves." If this last point were observed, what excuse could be given for this investigation?

## SOME ADVANTAGES OF SEX-EDUCATION

By MABEL STEVENS

"I don't want to be desiccated, Mamma, I don't want to be desiccated!" howled a little girl on her way to school for the first time. We too may not want to be educated: chiefly, I fear, because some of our pet theories and beautiful ideals will dry up and be powdered to dust in the process. Nevertheless we must not hold back when the hour comes, and to-day the hour has struck for a radical change in the foundation work of education. The earliest years influence forever the entire history of the individual, not only in the matter of religious views and practice, but in whatever direction a soul may progress; also the extent to which we progress is limited largely by the way in which we react to babyhood experiences. We forget them or repress them, yet they continue to be active in moulding our future. In connection with his far-reaching investigations Prof. Sigmund Freud, of Vienna, has done more to convince the world of the importance of the first impressions received by a child than any other psychologist who could be named. We are indebted to him and his followers for the most intimate knowledge of child-life ever obtained. That knowledge points to the necessity of a re-education which shall include predominantly a sex-education. The advantages to be gained thereby are so numerous that only some hints as to what they will be have been disclosed thus far. Let us hear what some of these advantages are, and why we are entitled to great expectations.

Let us begin at the little end of our horn of plenty. In the first place, it is highly probable that we shall be saved from the most humiliating situations and be spared many mortifying experiences. This may appear a mere trifle, but there are thousands of people ready to give more than a sigh of relief over even the hope of such a release. We all know that there is a necessary part of one's education not to be had in school or Sunday School. Lacking that knowledge, we may make many a "bad break." Now why are things of a sexual nature, for instance, the very ones to bob up unexpectedly from the depths of the hidden self? We begin to understand ourselves better when we have the needed explanation — It is because they are the ones subject to the most severe repression

and the greater the repression, the greater the desire to escape from their prison in the subconscious region of the mind. When the conscious-ego is off guard they rush into the open indifferent to consequences.

An over-sensitive maiden lady once wished to have the word *sex* omitted from the dictionary. Unkind neighbors laughed and said,— “Yes, to be sure you will find sex there, but you can search in vain for sex in that old maid.” “Pray! What is the difference between an old maid and a maiden lady?” “Why! don’t you know?” the heartless scoffers would reply. “A maiden lady has had offers of marriage, but an old maid never has. It is easy to see that yonder scorner of sex has neither loved nor been loved.” Thus was voiced the general condemnation of such a departure from normal life. We are told that the term *sex*, taken in its broadest sense, most nearly corresponds in meaning to the German word *lieben*. To love or not to love, that is a question which each person settles for himself, satisfactorily or unsatisfactorily. Years ago, when lovers were seen together, it used to be said,— “Oh! they are merely conjugating *amare*.” Evidently our maiden lady (we insist on calling her a maiden lady) had done nothing more. She should have done more. She should have married. *Amare* makes us think of a purely animal passion, or of a consuming fire of love beyond control. How old-fashioned that seems compared with the modern scientific interpretation of love! The Teuton definition represents something more. It requires words from a living language to express the most advanced thoughts on the problems of the Twentieth Century. One of the problems is that of sex-education. If the individual’s usefulness can be increased by a study of sex, then the world has a right to demand his education along those lines. In order to realize why the need of it is imperative, we must have a fair idea of what may be included as properly belonging within the field of work, and how many human interests will be affected by more enlightened views.

The sexual instinct, being concerned with the renewal of life, must fight every attempt at extinction. If the creative instinct meets a barrier in its natural path of activity, the vivifying power can turn into other channels. When it is thus deflected from the sexual and directed to various social aims, we speak of the process as *sublimation*. But when no accident happens and the pressure toward reproduction is relieved in the way originally intended, the power is by no means exhausted and part of the energy is occupied with creation in various directions. Religion reveals traces of its presence. Many religious rites have a sexual basis—circumcision is one

instance. Much of ancient and modern art makes no effort to conceal the workings of this instinct. Literature, in particular, poetry, is full of sex-symbolisms and sex-fancies. If we start on a mental tour of observation to note the sex-impulse whenever signs of its influence can be detected, there is no telling how far we must go. Had the excited maiden lady but known a few of these things she might have been willing to admit that *sex* has a legitimate place in the dictionary, and that disgust over the ordained conditions of life will not alter them. A thorough-going sex-education would have kept her from making a fool of herself. One of the good results of the newly-acquired knowledge will be to prevent people (especially women of a certain or uncertain age) from making ridiculous remarks. Security from a speech-calamity would indeed be a blessing to the adult members of the community; and what should we say if the *enfant terrible* had seen his last days?

The method of reaching the subconscious-ego and discovering its desires, hopes, and needs has been called psycho-analysis, since it helps the individual to search his own soul. The conscious-ego and the subconscious must both be taken into consideration, for manifestly to know one's self (as we are recommended to do) cannot be done unless one knows all about the entire self. There should be no secrets of the self from the self.

A psycho-analysis not only spares us humiliations, but acquaints with our concealed motives for action. It explains why we do as we do. So a psycho-analysis would have been the salvation of the woman distressed over the word *sex*. We may now profitably look into her case still further. When we are angry and do not dare to let our wrath blaze forth toward the real offender, we "take it out" on almost anyone else. "What have I done to deserve all this?" the poor victim will cry. We have not the face to tell him—"You? you have done nothing, absolutely nothing." We may be ashamed of our conduct; but the main thing is that the anger has been worked off. Some human being must suffer, if we cannot lay hold of the right one; therefore the brain-storm has spent itself upon a substitute. The same thing is true of the maiden lady's pent-up feelings; they had to belabor a substitute. Did it but chance to be the word *sex*? Ah no! No Freudian believes in chance. They fell upon the word *sex* because her thoughts had been occupied with the subject of *sex*. Did her wish indicate solely an objection to *sex* in general? Or was there a more personal element contained in the protest?

*Amare!* Yes, there was passion smouldering beneath a deceptive exterior. Her intense feelings of revulsion to the

thought of sex but measured the strength of that passion. She had hoped to see it burst into flame. Without doubt, she had provided herself many a time, in day dreams, with an ardent lover, or perhaps even a faithful husband and numerous children. She was not so devoid of love as her neighbors had believed. It is quite likely that no old maids dwell in our castles in Spain.

Now, bearing in mind that opposites may often stand, the one for the other, we could suspect the existence here of a subconscious wish exactly contrary to the spoken or conscious one. This would be in keeping with the disguise already carried through — since sex, the word, is a disguise for sex, the fact. Let us say, then, that unknown to her conscious-self there must have been a secret craving for what was thus openly despised. Instead of crying out, — "Oh, I wish there were no such thing as sex!" her very soul was shrieking for love. But social standards do not permit the wearing of one's heart on one's sleeve; hence no other course can be adopted by modesty save to give negative expression to longings of this sort. Along an indirect path they may force their way out of obscurity, on one condition however — that their possessor does not realize what has happened. If he becomes aware of it, then modesty has no screen and immediately makes a great "to do" saying, — "This must not be." Then the performance stops abruptly. The play has been censored; it cannot go on. A psycho-analyst would have had no difficulty in discovering what was the trouble with the emotional maiden lady. If she had known it herself, she would not have become the laughing-stock of the neighborhood. To her subconscious-ego the apparently senseless act was not senseless. Sex-education would have made this clear. "Ye shall know the truth, and the truth shall make you free."

Another advantage to be derived from a sufficiently broad sex-education is that it helps parents to understand their children, and teachers to understand their pupils to an extent not possible heretofore.

When an infant arrives the average mother will call it "a perfect little angel." Is the word sex to be mentioned in the same breath? Naturally not! Here is a darling Innocent just come down from heaven, from the kind Father of us all — for "Every good gift and every perfect gift is from above." Of course this is a beautiful way of acknowledging the source of our blessings; but Science shows that even in the bestowal of gifts the Creator follows the laws of the universe. The infant is with us because of the law of reproduction. We may well consider it a privilege to do our part toward the well-

being of the child; and it stands to reason that the more knowledge we have the better.

It is difficult to understand why sensible men and women should raise a hue and cry over Freud's observation that the germs of sexual life are present in the infant from the beginning. Many people have fondly imagined that the infant has no sexual life. This belief has come from the idea that purity and innocence are peculiar to the child; and to admit sexual life there would seem to shatter this pleasant conviction. Why? Because a sexual life and an impure life have been known, only too often, to be identical. The force of association is too strong, and it is a shock to one's nerves to think of an infant as having a sex-life. An unprejudiced scientific view of the sex question will no doubt change, in time, this reluctance to see that sexual impulses play a large part in the life of a child. As a matter of fact they do; and this conclusion has not been reached save after long and pains-taking observation. The almost universal infantile masturbation is evidence for this statement. The sex life of the infant is not like that of the adult. It is auto-erotic; that is to say, it is occupied solely with the child's own body. Nevertheless the activity is as truly sexual as that which succeeds it in later years. If we think of the ante-natal period, we must admit that long before we are born sex is intimately connected with our very existence. Why should sex suddenly cease for us, and not appear again until puberty? It would be reasonable to expect a quiescent state for a while, but to claim that sexual life was absent altogether would be to make an absolute break between past and future. The periods of infancy and childhood would then be a comparative waste of time, and that is contrary to Nature's economy. "Childhood prepares for the sexual life," you say. "Childhood is a period of development." True! But who can develop something out of nothing? At least the germs of sexual life must be there. We might have an expurgated dictionary, but it would not be of much use.

Granted, then, a sexual life as a factor of child-life, what comes next? It follows that we have a broader horizon and can observe the child from a greater angle of mental vision. For the present, however, suppose we turn our gaze in one direction.

It is easy for "the perfect little angel" to become "a perfect little tyrant" in the sheltered home-kingdom where he lives a life of perpetual wish-fulfilment. These wishes have to do with his body exclusively at first; but though some of his sense gratifications are of a sexual nature, of course he knows nothing about that. He cannot be aware of his own sex, nor

of a sex-distinction in his devoted subjects, the other members of the family. He does not know why father is father and mother is mother. This is true for a long time. At last, one day, he notices that they are not dressed alike. What does that mean? He is old enough to see this difference, yet not old enough to realize its significance. Probably in his own case he has to be told much later,—“Little boys wear knicker-bockers, little girls wear skirts.” Even then it is doubtful if he understands that sex is indicated. Yet he may have a dim idea of it, especially if a child of the opposite sex has come to contest his supremacy in the kingdom. Then strange thoughts enter his mind. He sees the new baby washed and dressed. The mysteries of the toilet suggest other mysteries. Comparisons arise, and with them numerous questions. Will they be answered? Perhaps not in the right way, perhaps not at all. Is he satisfied with the replies? In that case the questions trouble him no more. Is his curiosity thwarted? Then the excitement must find a parallel path of escape. He begins to ask all kinds of questions, except the one he is “dying” to have answered. This process of transference gives relief to the nervous over-tension. If he must not ask certain questions, he will ask countless others. If he is to be tormented by uncertainty, he will torment his tormentors. He will plague them unmercifully. Is this retaliation due to malice aforesought? Sometimes, but usually it is hardly so much that as it is the response to an over-powering impulse. “Why do you pester me so with questions?” many a tired mother has exclaimed. A Freudian sex-education would call attention to the sub-surface causes of her child’s annoying persistence. Civilization has built the high fence of Propriety directly across the road to the knowledge of good and evil in matters sexual. Look! Master Curiosity is kicking at the fence. Come, let us open the gate a little. If he tries to climb over the fence, he may fall. Better help him now. “It is too early, far too early,” the weary parent assures us. “He is only a baby, he cannot be thinking of such things.” But if we find he is, what then? Children dearly love surprise parties. At the age of four years, a little girl known to the writer, was in a crowded restaurant. Suddenly she called out at the top of her voice,—“Mamma, You couldn’t have had Helen and me if you hadn’t married Papa, could you?” For several minutes the child had been remarkably quiet. Who would have guessed that her thoughts had been prying open a mystery-box? A psycho-analyst, observing her pre-occupied air, would have suspected the fact, and there was the proof of it before

many witnesses. That child deserved to be given a truthful reply — at home.

This case is not exceptional. Almost all children are over-busy, for a season, with sex-problems of various kinds. The most perplexing one is that of their own origin. "Where do children come from?" is the question of questions which the individual child will not let go until some answer is either self-provided or else received from an outside source. Contrary to general belief, we find that the months between the ages of four and five years mark off a very active period when the child's imagination occupies itself with sex-fancies, some of them of an astonishing character. After having heard the word "hush!" spoken a great many times, finally it dawns upon him that it is not "proper" to talk of certain things, and hardly so to think of them. Yet they are most interesting. However, by degrees he yields reluctantly to the inhibiting-force set in motion by our social and ethical ideals of correct conduct. What he should not remember, he tries to forget. But Freud has shown that much of the apparent "forgetting" of childhood experiences and emotions is repression. The prevailing conviction as to the average child's complete ignorance of forbidden subjects is due to this instinctive concealment. The child feels disapproval keenly. To avoid it he will tell lies and pretend not to know many things of which he is accused. Secrecy is forced upon him. This is always an unfortunate state of affairs. It has given rise to the mistaken impression that the child's erotic understanding has not been awakened previous to puberty. Things which we must not and do not mention sink below the threshold of consciousness when their presence has become unbearable in the upper chamber of the mind. We all know how hard it is for a child to keep a secret, but it is kept indeed when it is thrust into the subconscious hiding-place. Memory, unaided, cannot reproduce such buried material. For that reason it seems non-existent. We should not allow ourselves to be deceived, however; and we should think of the child's health, which may be seriously affected by repression.

When should the sex-education of a child begin? Consistently from the hour of his birth. This idea is also different from the commonly accepted one which has reference chiefly to sexual enlightenment and postpones the date until puberty. Adopting Freud's views, we see that the sex-life of the infant must be regulated and guided, as well as that of the older child. It is now manifest how gradual sexual enlightenment should be, keeping pace with development of mind and body. How may we know when the time has arrived for definite in-

struction? Some of the signs of erotic-excitement are irritability, restlessness, wakefulness, or else terrifying dreams; so-called "causeless fear," which is really well grounded subconsciously, is strong evidence of sexual emotional tumult. Also the familiar incessant flow of questions is another indication that the child has come in contact with the sex-problem. It is the child's prerogative to ask questions; but when they are very extraordinary or when the same question is asked over and over until the listener is almost frantic, then we may be quite certain that a big question is lurking behind all the others.

Before the customary "school age" the future of the child has already been determined to a large extent. His earliest reactions give direction to later ones. Before the three R's come along, his little slate for life's school-work has been filled *once* at least. The pity of it is no writing can be erased, though it may be blurred. Therefore it is all the more sad that in spite of care many evils may befall a child even in the home. Hence it will be well to use an extra "ounce of prevention" by introducing there some of the Freudian principles of education.

The teacher is quick to detect the kind of home training that pupils have received. To supplement it, while making good possible deficiencies, is an arduous task. Here again some knowledge of psycho-analysis is invaluable in seeking for motives of conduct. A single illustration will suffice.

We have seen the child's persistence in asking questions; but how about answering ones put to him? That is different. What is the reason for his refusals? They cannot all be from ignorance. Of course there may be several causes. Observing him, we venture to offer one explanation. We speak of being "bombed with questions." To the child it may seem very like an assault. It compels him to take the feminine rôle of submission; and he does not like that. He knows well enough what it means. He has an object-lesson at home where father rules and mother obeys. Once he was king there himself for a little time. The memory of it is sweet. Power must be kept. Power gives pleasure. The command, "Answer me!" is an affront to his importance. Must he yield? Must he submit to being questioned? Never! He is not weak; he is strong. Silence is strength; silence is resistance to force; silence is a form of self-assertion. Silence does not give consent. Silence says, "No! You cannot compel me. I shall do what I like. That is what father does."

This train of thought may not be a process in full consciousness; but it represents the child's deepest feeling, for his

greatest wish has always been "to be a man." Father is the child's ideal of strength and power. A child's refusal to answer questions has usually been attributed to shyness, diffidence, or fear, but seldom to ambition. Perhaps the cause of cases familiar as "senseless obstinacy" may be in the "masculine protest" so well described by Alfred Adler. We say, the child wants his own way. But what is his own way? It is to act as if he were already a man. Father is the perfect man; and father has his will; so the more the child has his own will, the more he thinks himself like father. By furnishing one factor of the ideal, the other factors must materialize of course. This is the child's immature reasoning. To him the presence of the part implies the whole. Given the plums, and you have the pudding, in imagination. The male child envies the father and longs to supplant him. The female child admires the father and longs to appropriate him. The male child protests against waiting for the day of his own manhood. The female child protests against being "only a girl." Children may be trained to submission, but inwardly they revolt. They look forward to the happy future, the time when they can be commanding not obeying. They are eager to be "grown up," to be in authority. Even the meekest children have expressed longings of this nature. Impatience spans the intervening years with far-reaching aspirations. Every self-assertive act declares,— "Ich will ein Mann sein." Surely, as Longfellow writes: "The thoughts of youth are long, long thoughts."

Companion to the child's desire for power is his demand for love. This brings us to another point. A liberal sex-education shows the advantages to be gained by an understanding control of love,— the child's love for us, and our love for the child. To feel the necessity for moderation, we must consider these two aspects separately.

When it comes to affection we read an absorbing chapter of child-history. At the very first the infant appears to love all people indiscriminately. He has no sex-predilections; or rather, he inclines toward both sexes. His emotional life is bi-sexual. Whoever ministers to his comfort and pleasure, that person is loved. As mother is most needed, for a while, she stands a better chance of winning affection than father does. After a time, however, even her devotion will not prevent the female child from exhibiting a preference for father, and frankly adoring him. A male child, on the contrary, will feel the attraction to mother growing stronger. As the opposite sex seems more and more desirable with the passing days, it is not at all uncommon to hear children wish to marry. A little girl, brought up on the Bible, once said,— "Why can't

father have two wives, the same as the patriarchs?" Then she announced,—"I am going to be his other wife." The little girl of four or five years thinks she would make father a beautiful wife; and the little boy wants his mother "all to himself." Primarily the male child envies his father the power to keep mother.

We know of families where the girls love mother better. In such an instance probably mother will be found to have more masculine traits than feminine. It may be the child is taught that he ought to love father and mother exactly the same; but Nature is stronger than precept. It is predetermined that under normal conditions the male will love the female, and the female will love the male. Therefore the boy's first love is mother, the girl's first love is father. This intense love is by no means always good for the child. He is liable to cling to the beloved parent too passionately, too selfishly, too exclusively. The more a child has of love, the more he wants. He has not learned that love has limits. This determination of his to receive boundless love suggests the way out of a difficult situation. His inclination to bestow love (on the principle that love begets love) may be turned into other forms of activity than giving endless caresses. And the pleasure gained through the new interest will be a substitute for the love-pleasure which he craves so much. He may be led to enjoy music, art, the wonders of the world about him, etc. If he has inventive genius, it should be encouraged. In the beginning he takes up these things for love of somebody; later, if the sublimation is successful, he loves the things themselves. For example, the true student loves study, in and for itself, quite regardless of whether it brings him a living. Since there are infinite possibilities for sublimation, the child's native endowment should be able to reach expression. Psycho-analysis reveals what these are. It helps us to see clearly what sublimations could be reasonably expected in a given case.

And now a word about the love of parents for children. Is there danger of giving them too much? We cannot deny it. It is likely to happen—particularly if the parents are disappointed in each other. A corresponding response on his part to excessive love on theirs will tend to keep him infantile in dependence upon them. He may become unable to break these cords of love and form new ties. In the ordinary course of events a repression takes place during adolescence, and then the son or the daughter is free to love a stranger. Yet the mother-image or the father-image remains the ideal for all subsequent love. Naturally this limits the selection of a mate.

and explains why some people fail to marry. They never meet anyone who approaches their ideal. If the fixation is so strong as to prevent other attachments outside the home, the main purpose of existence is defeated. The perpetuation of the race suffers. The model husband loves his wife as himself; and the love of parents for their children is also a gratification of self-love. This is perfectly right within the confines of common sense. When the welfare of the child is put in jeopardy most parents will sacrifice their own happiness. As a rule they would be the last to prevent the marriage of their children. We believe that the strength of emotional fixations has not been fully appreciated. A Freudian education aims to destroy their power and diminish the number of lamentable tragedies, for it is a tragedy not to fulfil one's destiny. According to Divine plan, as at present operative, there can be no such thing as eliminating sex. If we could do so, it would mean race-suicide on a colossal scale; and that would end human history. In adapting ourselves to conditions the sex-problem meets us everywhere. Let us welcome every aid in solving it. We are now to benefit by the experience of an entire school of physicians who maintain that a comprehensive knowledge of self must include, not a few facts about sex, but a systematic sex-education.

## A CHILD'S IMAGINATION

By MARGARET MORSE NICE

What do we know about the imagination of children? With some it is too absorbing; with others it seems almost lacking. How can we stimulate or curb it? Must it come to an untimely end at the age of six or seven or by some means might the originality and creative power be carried on through later childhood and the whole of life? By the right stimulus at the propitious moment could we prevent people from becoming as utterly commonplace as most of us are?

These are questions not to be easily answered. We have a wealth of material, for every child is a potential subject for study, while some are so wonderfully original that it is a pity more parents do not keep a record of the imaginings of their children, thereby preserving something that would become a treasure to themselves besides being of value to others.

The present paper is a small contribution to this subject. It is a study of one child's imagination with an attempt to analyze the favorable and unfavorable stimuli and conditions in her case. Although she would not be called a highly imaginative child, yet in certain well-defined periods she has shown striking and original powers in this direction.

I have kept a record of nearly all the stories she has told, writing them down while she related them or as soon as possible afterwards. Before she was seven she had no idea that I was recording them except in two instances. She has always been sure of an interested and admiring listener in her mother. Often we have taken turns in telling stories, but usually she has said she could not think of anything; her inspirations came when they would and could not be called upon arbitrarily. After her sixth birthday she may have imagined to herself at times; however, since appreciation is usually welcome to an author and also because of the fact that by telling me a story I was bound to tell her one, the probabilities are that she told me everything that she invented in story form.

This child, E., is the eldest of four children. Both her parents are scientists, her father a physiologist, her mother a biologist. Her maternal grandfather was a historian and writer with an unusual gift for expression; three of his children are writers by profession, two being poets and dramatists.

Her health has always been vigorous. Her vocabularies<sup>1&2</sup> from eighteen months to six years are somewhat smaller than the average of those that have been published, which would indicate that she is not a precocious child. She seems to have a logical and scientific mind for she inquires to the bottom of things. Her specialty is nature; from babyhood she has loved flowers and animals and birds.

The aim of her parents has been to give her the truth as to the world about her instead of fancies, and to encourage her to find out things for herself whenever possible. Over-stimulation has been guarded against, probably at times too much. There has been little attempt to teach her things unless she has asked about them, but she has heard much of the best of the literature suited to her age.

#### IMAGINATION IN HER PLAY WITH TOYS

The way in which children play with toys differs widely; some plays are simple imitations of their own or other people's activities; others are dramatic, imaginative adventures, while between these extremes there are all gradations. Most of E's play would come about midway between the imitative and highly imaginative. Only twice has her play been of this latter type; when she was six and a half years old and again at eight and a half. In general she has cared little for toys, almost never playing with dolls, while she has not had any particularly cherished object about which many children weave fancies.

#### DRAMATIZATION

She has dramatized very little, i. e., pretended herself or her playmates were animals or different people and acted accordingly. The more important instances will be noted in this paper.

#### IMAGINATION UNCONNECTED WITH PLAY

This study will confine itself to her creative imagination that had no foundation in an object or in play—fancies spun out of her brain alone. The main aspects of her environment, her social and cultural stimuli and her activities will be touched upon in the description of the periods of imagination and the intervals between them, in the hopes of finding some of the factors that conditioned her creative moods.

<sup>1</sup> Nice, M. M. The development of a child's vocabulary in relation to environment. 1915. *Ped. Sem.*, XXII, 35-64.

<sup>2</sup> Nice, M. M. The speech development of a child from eighteen months to six years. 1917. *Ped Sem.*, XXIV, 204-243.

Her environment has had two chief features; she has spent the fall, winter and spring in a small town in Oklahoma and the summers in the country in Massachusetts. She has been much at home, never having gone to kindergarten, nor to school until she was seven, therefore her cultural stimuli have been known and controlled. Her chief playmates have been her younger sisters and her boy cousins.

#### IMAGINATIONS UNTIL THREE YEARS OLD

Until she was three years and five months old, E showed very few signs of imagination. The first instance was dramatization when she was two years and four months old; she came running to me with a pillow, saying: "A great big lion is comin' in wid dis pillow. You look like mice." Her grandmother borrowed my watch; E said, "A mouse borrowed your c'ock;" then later, "A 'gunk (skunk) borrowed your watch." "A 'gunk comin' in a cawwiage wid G'amma,"—this time it was herself.

When two years and nine months old, she told me, "Bad wats (rats) are under your desk." She threw beads on them and then nearly burst into tears when the waste basket at the side of the desk was carried off. "A wats will come out!" Another day she played there were bears there. "Bears are takin' dust baths—dat's what a hens are p'ayin' (playing) at. Big Bear says to a Little Bear: 'Don't 'day (stay) in dere anyhow. Come out on a 'dweet (street).' Little Bear comes hoppin' out on a chair."

When three years old she was sitting by her baby sister and told me, "We're p'aying we're two little boy witches." Another day she was climbing over the head of the bed and said: "Lions will help me up. Dey are fwriendly lions. Dey have fwriendly teeth. Dey have cotton on deir teeth."

She was fond of singing to herself at this time, "A Widger is a Wadger." Once she explained this statement as follows: "A Widger-Wadger is a kind of goat what wears a pink dwess. He has a kind of wapper on when he goes to bed. Two little baby ones say: 'Widger-Wadger, we go on a walk. Well, where shall we go?' And a mudder takes him on a walk, and a fader. And when he goes to bed he has some water, because he's very sick. He s'leeps in a big bed. Widger-Wadger, did you hurt yourse'f?"

These were the only instances of imagination she showed except in play with toys before her third birthday.

## FIRST INTERVAL

*From Three Years to Three Years and Five Months. July, 1913, to November, 1913*

Except for a little dramatization—pretending she and the baby were foxes, frogs, rabbits or skunks—E seemed to be entirely lacking in imagination at this time. From September to June she lived in Norman, Oklahoma, a town of 5,000 inhabitants. Our house had considerable grounds around it with good trees for climbing, one of E's greatest pleasures. She saw little of other children during the fall. Her only pets were hens. She did not have much cultural stimulus at this time, hearing some fairy stories and poems of Blake.

## FIRST PERIOD OF IMAGINATION

## THE BABIES, THE HANEATER AND STORIES

*From Three Years and Five Months to Four Years. November, 1913, to June, 1914*

*The Environment*

Until the middle of January there was no change in the social stimulus; at that time I started a Montessori Nature Study School which lasted until the middle of May. The main benefit E received from the school was the social training through being with other children. I told them fairy tales and nature stories, and rhymes from Mother Goose and Christina Rossetti, while E heard many stories and poems besides. For pets she had in the winter frogs, turtles and rabbits, and in the spring snails, crawfish, toads, tadpoles and horned toads. Her father's bees were a great source of interest. The walks to get creatures for the aquarium and to find new flowers were among her special delights.

## THE BABIES

One day in November after she had been down cellar, she told me she had some babies down there and had been playing with them. Next morning they were "p'ayin' wid a calf. Dey love calves." "Dey are p'ayin' in a sandpile. Dey are girl babies." "Dey are a'seep." "Dey are takin' a walk. Dey are big babies. Dey are nice tame babies. Dey like to p'ay wid me better dan D (her sister) does."

Another day she said: "Dey go to 'gool (school). Dey have a 'goole for deyselves." "One baby named B'ackie is sick. I was givin' him somepy to eat."

She told me that the babies and she lived in a little blue house. She cooked, sewed, swept, washed dishes, cared for the babies, and so forth. "I cook milk and I 'derilize (sterilize) milk." "I buyed my babies at a chocolate 'dore (store)."

For two weeks we heard a great deal of the babies; they did everything she did, always going on walks with her.

December 17th, she announced: "One of my babies grew up and has a baby of his own." "D isn't a quick baby like mine." Ten days later most of her babies had grown up. "Dey ate so much food, dat was why." Although still designated by the same name, they did all sorts of remarkable things, from laying the new sidewalk to building the neighbor's house.

Her imagination simply ran away with her now. Everything we would mention, she could duplicate. I told her that sometime she could have a little dog. "I have a dog now," said she. The gasolene for the stove gave out, and she came to the rescue with: "You can have some of my gasoline, mudder. It's updairs. I can cawwy it down; it isn't very heavy." And finally: "I have a labwatory. Would you like to teach in it, fader?"

It certainly was a great change in two months from no indications of imagination to an imagination so absorbing that we began to wonder how we could curb it. The babies had flourished for a month and a half and imaginary possessions for the next two weeks; then the little school began and so filled her mind with real things and the companionship of children that she quickly forgot both babies and imaginary possessions.

The babies were evidently a kind of "imaginary companion" such as many children invent.

#### THE HANEATER

The Haneater was invented shortly after the arrival of the babies and lasted longer. On November 25th, she told me about a kind of a pet she had, called a "Haneater."

"It eats hands what are broken off of killed people. It eats eggs and salmon on bread, like people. It f'ies (flies) awound and f'ies awound. It s'leeps in a hen house. It eats paws of hens — dat dead hen in a woad. I can pat it and pat it."

It seemed to be like a large rooster, white with some black and red on it. It laid monstrous big eggs. E had to put food way down its throat. "He pushes it in wiz his foot."

The starting point of her fancy may have been the sight of some hen's feet in a neighbor's yard.

She told us a great deal about the Haneater from now on. He went on walks with her. It was dangerous to pat him on the head for he "might eat your hand," but it was safe to pat him on the back, the wings or the legs; her babies did. There were a father, mother and several baby Haneaters.

"A Haneater is my best pet. I feeded my Haneater."

"A Haneater is goin' to hang up his 'dockin' (stocking). He has wed 'dockins.' Santa Claus gave him a dog and a toy Haneater with which he played—all imaginary."

We heard of him often all through January.

"A lion and a Haneater  
Jumped over a high fence,  
And den dey looked awound  
To eat some grass."

"Dey eat grass and worms; dey are very fond of worms."

"A Haneater hasn't any 'dockins'; dey got all tored to pieces. He has some lellow (yellow) 'dockins' but he hasn't any shoes. Dey are made of paint."

After a dusty windy walk she told us:

"A Haneater likes a wind and a dust. He just *lumps* awound in it. Dust doesn't hurt his eyes; his eyes are diff-wunt. Dey are wough (rough) like 'dones (stones). His feaders (feathers) don't come out very much. Sometimes when he f'ies, dey come out. He 'gwatches (scratches) his-self to make dem 'day (stay) in."

We heard very little of the Haneater after the school began, but one evening in April she told me about him as follows:

"He's very fierce now. He fights a Maxwells (neighbors) and pecks 'em, so dey hop into deir house. He tries to kill people. He doesn't peck me, but he pecks Guy (a playmate); he sinks it's a joke to peck Guy but Guy doesn't sink it's a joke; he wuns away. I carry him in a box so he can't peck people. Sometimes he f'ies up in a c'ouds."

"A mudder can't leave her babies. A mudder Haneater and baby Haneaters are gentle. Dey don't peck people."

Again she said nothing of the Haneater until June 23rd, when she told me: "I know a 'dory (story) about a Haneater. A fader Haneater laid back his head and sat on a eggs. He hatched out baby Haneaters and dey were very good about catchin' bugs for deyselves. A fader Haneater wasn't very good about catchin' bugs for dem. A mudder Haneater sought she would hatch some baby Haneaters. She said: 'I will hatch two mudder ones and one baby I will leave in a egg. It's a *wotten* one and I will just leave it."

"Mudder, why do you call them Haneaters?"

"You named them that yourself" said I. "Why did you call them that?" "P'raps I sought it was a pretty name."

On August 11th was the last time she volunteered anything about the Haneater. "He came out of a hen house and f'ew over a train tracks and settled on a train and rode somewhere. He built a nest in a tree. He gets cats for his babies. Sometimes he gets crows. He f'ew way up in a 'gy (sky) awound and awound. He wescued old horses so dey would never die. He gives 'em lots of food. Some people get little when dey eat much food. A horse got some wings made for him and went f'yin' all over a world. 'Who made dese wings?' said a horse. 'Me,' said a Haneater."

After this when we inquired about the Haneater he and his family appeared to be scattered over Europe viewing the war. Father Haneater fought lions, sometimes with guns and sometimes without. One day in answer to a question about him she settled the matter once for all by announcing, "I just dreamed about a Haneater."

The Haneater is the most unique of E's creations at this age; she invented a character of force and originality, and always was consistent in her descriptions, although months elapsed between her different tales. I read her these stories of the Haneater when she was seven years old; she appeared to disapprove of his character and remarked, "I wouldn't like him." However, when eight and a half she was much amused over him.

#### HER STORIES

The stories began a month later than the Babies and the Haneater, and instead of being unfavorably affected by the school they gradually increased, but reached their zenith in May and June, just after the close of the school, after which there was a rapid decline as soon as we went east.

E told her first story except those connected with the Haneater on December 7th. "Lions went out to walk. Dey got lost. I drove 'em back wiz my 'driped (striped) suit on." This imaginary suit was "lellow, brown and b'ack. It has a mitten to it; one mitten is lellow and one is b'ack."

On December 28th she told several stories that may have been suggested by the book of Aesop's fables she received for Christmas; at least the characters of the stories may have been so suggested, but there appears to be no plagiarizing of plot.

"A lion and a hen looked at eachoder and dat was fun. Dey made friends and ate corn afore a English 'barrows (sparrows) ate it.

"A lion and a fox were eatin' corn. Dey saw a hen and dey *womped* away from dat hen and ate deir own corn. Dey were afwaid of dat hen."

She told stories from now on, perhaps one or two a week, her interest gradually increasing until in May and June the story-telling reached a climax of several a day. On examination they show two sources: stories told her and her own experiences. Most of them can be placed in one class or the other according to their chief source.

The earlier stories especially are based on her own experiences; animals are the actors instead of herself. For instance, after we had got some frog's eggs for the aquarium, she told this:

"A dragon and a mouse went on a walk and found a toad and a frog. Dey laid eggs and den p'ayed wid 'em."

Another story, told in March, was based on her interest in the bees.

"A fox found a bee-hive and took it home to his mudder. Her looked in it and found all a bees dead. No, dere was one bee in it and he made so *much* honey. Den dey got six bee-hives and had so much honey dey didn't know what to do. Den, a bees were killed."

"What killed them?" I asked.

"A lion, I sink, killed um. Den a soldier came and killed dat lion."

Frogs and toads, crawfish and tadpoles, rabbits, mice and bees are the main characters in these stories. Going on walks is the chief theme, the adventure being either seeing some animals or catching something and bringing it home. Despite her great interest in flowers at this time, they are never mentioned in her stories. Mothers and babies are of much importance. At times these stories were very long and rambling, and occasionally it was a little girl who went on a walk and discovered the animals.

The other kind of tale was based on those she heard. In June she told two stories on succeeding days that well illustrated her method. Her sources were evidently the Indian legend, "How the Chipmunk Got His Stripes," in which some animals wanted it night all the time and some wanted it day, Field's "Gingham Dog and Calico Cat," and a large colored picture of a pig cooking supper for a cat and dog.

"Once a cat wanted it night and a dog wanted it day. A cat wanted it night every time and a dog wanted it day every time. Dey quarrelled because dey didn't have dinner on time. A cat wanted to catch all a mice and give 'em to her kittens. One was lellow, and one was b'ack and grey and all colors.

Cat quarrelled, den a dog made supper earlier and earlier. Cat had supper so early till it got to be very early supper as could be. It got to be a very nice supper when dey had chocolate all a time. Dat person was busy holdin' a 'dripe (stripe) in a fire. One fire burned out."

It is easy to see how the story, poem and picture are responsible for every feature of her story except the idea of having supper early and catching mice for the gaily colored kittens.

The next day's story began thus:

"Once a dog and cat grumbled which was day and which was night. A dog said 'twas day and a cat said 'twas night. A cat 'gratched a dog on his back and made a mark. Den dey jumped on deirjoder's (eachother's) backs." Later the dog made a feast in his house with bran for hens, meat and bones for dogs, milk for the cat, and so forth.

In this story the significance of the day and night quarrel is lost, but she has inserted the scratching of the mark on the animal's back.

Other stories were based on the robbers in the "Musicians of Bremen," on "The Cock, the Mouse and the Little Red Hen," on a dragon story from the "Altenheldenbuch," and on Beatrix Potter's "Mrs. Tittlemouse."

The story enthusiasm reached its height in late May and early June. We left Oklahoma the last of June; in Massachusetts she stopped telling stories almost entirely. She told only four or five in July and August; one about a fox and cricket, and one about lions, tigers and angels, perhaps suggested by Blake's "The Sun Descending in the West" ending with: "A mouse came 'gweakin' (squeaking) out from under a board. 'Sank 'ou,' said a cat. 'I'd like to eat you up.' So he caught dat mouse and ate it." "Once a dragon came and didn't eat up a hens. He found some bread and he gave dat to a people. He got so friendly. Somebody got him tame."

There is little originality about these stories since both plots and characters are taken from real life or stories told her and simply combined in new relationships. There is much absurdity in some of her stories as with most child inventions; the incongruity of having a lion and a hen make friends and eat corn, and a dragon and a mouse go on a walk together, show lack of experience instead of a sense of humor. She apparently mentioned any animal that popped into her head regardless of grotesqueness and told her stories as exciting adventures rather than anything amusing. When she was six I told her some of these tales and she laughed and laughed over them.

She has never since then taken up this same kind of miscellaneous story-telling to any extent, though occasionally there have been solitary examples.

#### SECOND INTERVAL

*From Four Years to Four Years and Ten Months. July, 1914, to April, 1915*

This long unimaginative period comprised two months in Massachusetts and eight in Oklahoma. The summer was full of social stimulus with cousins, grandparents, aunts and uncles. There were no end of interesting things to do—riding in the automobile, wading in the brook, walking in the woods and exploring the rocks. Life in Oklahoma is very tame to the children in comparison to their summers. The first five months in Oklahoma were characterized by a general lack of social and cultural stimuli. D was two years old and a good playmate for E, but they saw no other children except two small boys once a week. They had two rabbits for pets all the year. I told no stories but read some "Hiawatha." In December she heard a great deal of Mother Goose and other rhymes which D demanded incessantly.

From January 21st to April 7th her social and cultural stimuli were considerably greater for the Montessori Nature Study School met at her home. The children heard a fairy story every day and rhymes, mostly from Mother Goose. In April E was given Kipling's "Jungle Book" and asked for "Riki-tiki-tavi" over and over again.

She told a short story in December about a farmer and his hens, and three in February, one about a fish laying eggs on her pet rabbit's head, one about a wren and a chickadee and the last about a robin and chickens.

#### SECOND PERIOD OF IMAGINATION

##### LARVEE AND BOW-WOW

*From Four Years and Ten Months to Five Years. May and June, 1915*

##### *The Environment*

The environment during this period of intense imagination was the same as that at the end of the second interval, except that the school had ended a month before. She was outdoors a great deal playing with the rabbits and baby chickens.

## LARVEE AND BOW-WOW

About May 1st I made up some stories about the adventures of a certain "Ducky-Daddles," in one of which a fox was driven away by a friendly dog that E named "Bow-wow." She kept begging for stories of Ducky-Daddles, but soon took up the matter herself. The animals started as imaginary and later their names were attached to small wooden toys. One, however, was a toy first, a little lamb she named Larvee, for what reason we never knew. She played with the animals to some extent, but most of their doings were merely stories told when she was not handling the toys.

Her first story, told May 6th, was closely based on mine: Bow-wow and all the ducks and geese were driving a donkey and were driving a horse. She soon evolved original characters for Bow-wow and Larvee.

The following are a very few of the things she told of them:

"What did Bow-wow spend his whole day doin'? Just takin' rests. Larvee does that, too, and the horse. They go out at night."

"When it comes suddenly light, they go rushin' to take their naps. They hunt all sorts of animals, foxes and wolves, and wolves and foxes. They got their tummies all full of foxes."

"First they started on the tiger and ate it. When they got all the tiger's legs bitten off, then they ate the tiger up, and up and up. Then they went back to the lion. Bow-wow heard the lion roar and Larvee ate him up."

She told stories of the wonderful doings of Bow-wow and Larvee almost constantly in the latter part of May and early June. Her thoughts seemed wholly taken up with these imaginary creatures and once again we thought her too absorbed in her fancies, much as she had been at the age of three and a half in her imaginary possessions. On the trip to Massachusetts, June 8th, 9th and 10th, all her conversation was of Bow-wow and Larvee. They were supposed to be dashing along beside us on a train of their own carrying the ducks and hens with them. They killed eagles, had E sew their wings on and then flew fifty miles at a time.

"Larvee splashed in the water and his wings flashed like lightnin'. He loves to go in the water. He's just a little curly lamb."

"Bow-wow goes to all the worlds he knows; finds whether they are safe or not." "The more Bow-wow fights, the stronger he gets." "He can just bark as loud as thunder." "Bow-wow thinks he'll live forever, but it's really Larvee who will."

This summer, just as the year before, her imagination be-

came less and less absorbing; Larvee and Bow-wow were relegated to the background as her life became full of more interesting realities. She told only six more stories in the next three months, their dates being June 14th, 20th, 21st and 26th, and July 5th and 6th. One was an account of some enormous collapsible toads that Bow-wow had "great times pushing down into a hole with his paw," while the theme of four of the others was magic transformations, apparently suggested by "Puss-in-Boots," which she had just heard for the first time.

"All of Bow-wow's and Larvee's time is taken up of killing."

Bow-wow let his children wear just the kind of colored socks they wanted and in various ways his practise was different from mine.

We heard nothing more of these animals until the middle of September when we were traveling west; then the subject was suggested by seeing some pictures I had drawn of them on our journey east. E wanted me to illustrate their adventures and when I asked what I should draw, she invented the following:

"Bow-wow and Larvee were swimming and a frog got a match and scratched it by mistake on a piece of wood and set the pool on fire. Bow-wow and Larvee just *rushed* away!"

The origin of this cycle of imagination is known; the Ducky-Daddles stories. She chose one character, the least important in my story, and adding to it a toy, made two great heroes of valor. The adventure element seems to be uppermost in these inventions, for we hear mostly of hunting and fighting and remarkable exploits of speed and skill. I never could detect much difference in character between Bow-wow and Larvee, although in general Bow-wow seemed to be the leader; yet in the stories told during the third period of imagination, Bow-wow is almost forgotten and Larvee comes to the fore, although mainly in the character of an ancestor.

### THIRD INTERVAL

*Five Years to Five Years and Four Months. July, 1915, to November, 1915*

This four months' interval between imaginative periods comprised two months in Massachusetts and two in Oklahoma. The stay in Massachusetts was full of social stimulus, besides the delight of outdoor life in the woods. E heard Browning's "Pied Piper" over and over again, "Hiawatha" often, and various fairy stories. In Oklahoma she had a five-year-old

neighbor girl for a playmate beside D, who was now three. Her chief cultural stimulus was Kipling's "Jungle Books," which she demanded over and over again.

### THIRD PERIOD OF IMAGINATION

#### HOUSEKINS AND LARVEE'S BABIES

*From Five Years and Four Months to Five Years and Seven Months. November, 1915, through January, 1916*

#### *The Environment*

The environment was not different in any way from that of the preceding two months except for the cultural stimulus and the excitement of Christmas with its consequent new possessions. Doubting the wisdom of a constant diet of "Jungle Books," I introduced Curtin's "Hero-Tales of Ireland," which E liked for a change, but she soon wished to return to the "Jungle Books." She also heard "Hiawatha," miscellaneous poetry, Boyd Smith's "Story of Noah's Ark" and Lady Gregory's "Cuchulain of Muirthemne." She apparently pondered over what she had heard, for she asked questions constantly about the various books. Due to her insistent demands I made up many stories of the Ducky-Daddles series.

She was rather difficult to manage just before and at times during this imaginative period, probably because she did not have enough worthwhile occupation for her surplus energy.

On October 27th D began to tell us of the animals she had and in the next five days her possessions included a puppy, a big dog, a horse, bunnies, a cow, chickens, white mice and an automobile. This started E on November 2nd to telling us that she had lions and tigers. She let them out of their yard and they ran around and got their food which was chickens. "Chickens what have had roup"—a sad experience in our own hen establishment. "I kill them and leave them lying around." She also fed them cats that happened to come around. (Her enmity towards cats which is evident in many of her stories is due to her great love of birds.) Although D continued to tell us of her imaginary animals, E never mentioned hers again.

On November 12th she told a tale of Bow-wow, Larvee, Ducky-Daddles, our whole family, a lion and some snails who crossed the ocean to an island. The next day she dictated to me a long narrative, the first time she knew of my copying; it was a rather incoherent tale of various animals and her baby sister with a great deal of verse interspersed. This happened by a chance diversion from a defiant mood. Two days later she dictated some more verse—most of it nonsense—based on Blake and "The Jungle Books."

## THE HOUSEKINS

On November 28th began the most important imaginations of this period—the accounts of the Housekins. They started as horrid little creatures that ate our food and pinched people. The next day their characters seemed to have changed; she drew a picture of a Housekin—it was something like a brownie with a pointed head—and told me the following:

"They just live in houses. The only thing they help about is telephoning. If you make a mistake they run and telephone. They're great climbers. They're good; they do some damage and do some good. The mother Housekin stays at home in the trees. They eat up the not good food in our house and give better food; that's how they do their living. They have very sharp nails. The Tree Housekins live in dead branches. Sometimes they steal away the English sparrows' nests. They eat the nests all up with the eggs or babies in it."

The Tree Housekins are the ones that pinch. They catch cats and swing them down. They give toys to children.

"The Tree Housekins curl up and wind around. Their shape is like a snake. The babies are like little tiny snakes. They have eggs like snakes. They have twenty-four little eggs or only one egg. The babies puff out fire when they see something and kill the young males of the English sparrows or the fathers and mothers."

From December 1st to 9th I read to her every day from "Cuchulain of Muirthemne." She was intensely interested and asked me all sorts of questions; it seemed to fill her mind as Bow-wow and Larvee had done six months before. She invented nothing during these nine days. Thinking "Cuchulain" a little taxing for her, perhaps because too difficult, I stopped reading it. In two days her creative imagination was in full force again.

On December 11th she told me that Housekins taught babies not to cry. They taught her baby sister not to have stomach aches; they would creep in and put a block on her head and put spells on it and afterwards in the night they would take it away.

Later in the day I asked her about the Housekins and she gave me a long account. There are Clock Housekins that make themselves as small as insects and come into houses and look at the clocks and tell the animals the time. "Why do the animals want to know the time?" I asked. "Then they hurry." (She herself could not tell time.) These Clock Housekins have stings in their tails. They step on cockroaches and kill them and eat them. This is how they earn their living; people pay them a penny a day. "What do they buy?"

I asked. "Oh, little clothes for themselves from mice." (This might have been suggested by Potter's "Tailor of Gloucester," although she had not heard it for many months.) They catch mice babies and train some of them to work for themselves and some for mice.

December 13th she told a good deal about Clockkins. They are round, larger than clocks, with four tails—two short and two long—that help them in swimming and climbing. They have no legs but just roll along. They have stings on their sides and around their tails. They live in shells that are too large for them until they grow up to them. They tie their four tails together to protect themselves from enemies when they go to sleep. Their enemies are lions and sometimes snakes try to wind around them but they get stung. They let toads come into their shells. (E is very fond of toads.) They have jewels in their tails and give them to people and children. This is magic. Sometimes they pretend they are dead so children can get their jewels and then their tails grow out again.

The next three days she told exciting stories about Housekins and illustrated them.

For ten days—just before and including Christmas—she told nothing of Housekins, yet she told two Larvee stories and dramatized—playing she was a mother toad with one thousand babies. On December 26th I asked about the Housekins and she said that young Housekins start out as eagles. The parents take stones, make them into the shape of eggs, hollow them out and put in wet cotton, fixing a little window over them of egg shell from a bird's broken egg. They have to wet the cotton every day, for dry cotton would hatch out a bad Housekin that would bother people. These eggs are left on the ground by trees. If animals eat them, they burst the animal in two. The little eagles look out of their windows and see whether the animals are bad.

December 30th was the last time she mentioned Housekins; she told a good deal about them, one item being that Clockkins mend clothes for people. She invented a new kind—Horsekins—that have heads like Housekins, feet like horses and wings like eagles.

When I asked her fourteen months later whether she remembered about the Housekins, she had no recollection of them.

The Housekins are the most original of any of this child's inventions about which she gave a series of accounts; other creatures may have been even more astonishing but they were isolated fancies and quickly forgotten. Their habits and characters are unusual, but it is especially in their structure that

they are unique and have no prototypes in nature. They are the first example of what might be called "life histories," i. e., descriptions of habits with practically no attempt at adventures. Although she originally had these creatures bad, she changed them into nice little household helps, having them assist by telephoning, by supplying choice food, killing cockroaches, mending for people, charming away babies' stomachaches and giving toys and jewels to children. Her natural history bent is evident through the Treekin's dislike of the enemies of song birds—cats, snakes and English sparrows, by her elaborate description of the appearance of Clockkins and her ingenious scheme for the development of the Housekins. She must have visualized these creatures clearly to herself to have been so consistent in her descriptions of them from day to day.

#### LARVEE'S BABIES

The first week in January she told stories nearly every day and dramatized "Jungle Book" incidents. On January 4th she was drawing pictures and invented the "Dancing Gongins"—creatures with large bodies, tiny heads on long necks, waving arms and sizeable feet. The egg had a head and neck peeping out. "When they lay their eggs they sprout out like an ant and when they're bigger, they're caterpillars, then grasshoppers. Then they sprout into a kind of box and then they turn into Dancing Gongins. They have the best time in the snow. They always have snow where they live by Santa Claus.

And they dance and they prance,  
And they dance and they prance,

All the day long and they have a great chance.

They dance in the snow and they dance every place."

The next day she told me how wonderful Larvee's babies were; they could leap up to the sky with the world on their backs; they would carry her up to the moon so she could catch it and bring it back to earth. (Apparently she considered it about a foot in diameter) The babies started out as specks of dust, then they grew to the size and shape of electric light switches, and they dance and prance and leap a hundred miles at one small jump. They also turn on the lights if they are out of order. Then they turn into beds, duck-ducks and various other things. Duck-ducks are a kind of animal that turn into eagles and carry off kings.

January 7th, she was feeling rather rampageous when going to bed, so to divert her I inquired about Larvee's babies. She said they change into little birds and cats eat them up and that kills them and kills the cats, too. However, they "are born

again into other families as specks of dust." This is the only way cats can be killed; they kill hundreds of cats.

The next day she told me of some paper rabbits that Larvee made for her, one of whom ran a thousand miles in a minute and shot English sparrows and knocked their nests down.

From now on the manifestations of imagination became fewer and fewer. She improvised songs in January and February, one of them beginning

"Larvee was dancing one day  
As a dragon came along."

She told only a few isolated stories, one about lions on January 21st, another about bunnies on February 3rd and on March 6th, "Mole-flies," something she made out of plasticine that looked much like a tadpole. "They have fish's tails and bird's feet. They eat turtles that have died and poisonous snakes. The mole-flies and larvee-flies live in swarms in trees. They live in deserted birds' nests and eat the lice if there are any lice."

The Dancing Gongins, Larvee's Babies and the Mole Flies are further examples of life histories. Larvee's Babies killed cats and their rabbits killed English sparrows, while the Mole-flies were also useful to birds in a humble way. Both the Gongins and Larvee's Babies, besides the Housekins went through most wonderful changes as they grew from babyhood to maturity; the account of the Gongins suggests an entomological source, but perhaps "Puss-in-Boots," which she heard in the summer and which had an immediate effect on her stories at that time, is chiefly responsible.

#### FOURTH INTERVAL

*Five Years and Seven Months to Six Years and Six Months.  
February, 1916, to December, 1916*

This interval was longer than any that preceded it. From March to September was spent in Massachusetts where E's nature interests absorbed her more than ever before; she was outdoors most of the time wandering about in the woods, wading in the brook and catching water animals. She might have imagined to herself, but she declined to tell any stories, always demanding them from me, although she was often disappointed because my imagination was so halting. She said, "If I have children I will tell them Larvee stories till I die, and they will tell them to their children till they die." "Some of these stories will be new and some old." She heard a great deal of nature reading, Curtin's "Myths and Folk Tales

of the Russians," Macdonald's "Princess and the Goblin," "Uncle Remus," and other stories.

In the fall in Oklahoma she wanted to hear nothing but "Bird-Lore" for six weeks; then I read to her Curtin's "Hero-Tales of Ireland," Boutet de Monvel's "Joan of Arc," "Baron Munchausen," "Japanese Fairy Stories" and "The Wonderful Adventures of Nils." I taught her at home, letting her make up her own reading lessons; she told me the story of her pet robin and accounts of other birds, thus approaching the matter from a creative rather than a receptive point of view. She did not have many playmates except her two small sisters.

Six or seven times during this interval of eleven months she made up stories as explanations of the pictures she drew.

#### FOURTH PERIOD OF IMAGINATION

##### HER HOME

*Six Years and Six Months. From December 20th, 1916, to January 20th, 1917*

##### *The Environment*

The environment was not in any way changed from that of the preceding non-imaginative period except that during the first week of December we made a family of stuffed cloth cats for the baby, but these animals so entranced E and D that their chief occupation for the next two months was playing with them. Their play was imaginative and dramatic, E being the leader in it. Although most of the characters in E's stories are good, the main hero of these plays—"Tabitha Twichet,"—the mother cat was a decidedly bellicose, really bad creature. It might have been due to the play element; that fighting and struggle are dramatic, whereas a story may be just an account of life histories as most of E's later stories have been.

##### HER HOME

The imaginations that began about two weeks after the arrival of the cats and that continued simultaneously with them were stimulated by D as in October, 1915; but instead of being an isolated occurrence, they became a small series. D had been telling us all fall about her Home, where everything was perfect, and had been urging us on all occasions to come there. About December 20th E invented a rival Home.

She lived in a castle, had a husband and ten children who were looked after by Passenger Pigeons. The weather was always warm. There were no insects there so her birds ate grain. There were no diseases there. She had several lions

that carried her children on their backs. A statue of a monkey holding a flag stood on top of the castle to show that she (E) was Queen of the Animals.

Her Home was at the South Pole; in order to give it the delightful climate she wanted, she invented an extra sun as large as our house. Her old home was up near the real sun and it was terribly hot there. Still later she moved to a separate planet.

On January 6th she said that they had sent all the Passenger Pigeons off to the South Pole because they were so bad about eating their wheat. Now the "Pincushion Birds" cared for her babies; they made nests as large as our veranda in trees with trunks as large as our house that grew up to the sky, higher than the clouds. If the babies fell out of the nests they could fly into "Bag Birds'" nests. Bag Birds made nests all over the trees and ruined them sometimes; they went in flocks and picked up crumbs for food.

The next day as she was getting ready for bed, she was gargling her throat with shrieks and squeals, to which I objected. "I have to sing or I couldn't be Queen of the Animals. I'm not Queen of the Birds or Queen of the Reptiles." "The snakes at my home sing this way. They go into the woods early in the morning to stir up the birds." The Pincushion Birds and Bag Birds liked to stay in their beds and keep warm, but they were afraid the snakes might climb the trees, yet this was impossible, for they were "slippier than glass."

On January 9th she made a picture of a "Tree Turtle;" I will quote part of her description.

"It has a long, curly, furry tail; sometimes it hurts you when it hits you with it. There are jaws on the end of the tail that can bite; they poison. All the rest of the turtle climbs. And also the little poisoning thing—that little spike—they stick into trees sometimes to help them climb."

"Once they did come to my home. We had terrible times getting away from them. They can rush fast. They can put their tails on their backs and poison anybody who might get on their backs."

"They are very beautiful if one can get one. Sometimes they are trained, but one has to cut off their tails so they won't sting. Sometimes they come in a great army, but that's very seldom. The way they catch things is to put their tails down on the water or up in the air; that's the way they get their prey.

"Turtle-Tortoise is the name of their land.

"They don't like to get into water very much, only their tails. The usual length of their tails is as high as this room, but some unusual ones are as high as this house and their tails a mile long. There are lots of Dinosaurs there. Everybody who goes there gets tramped over or eaten. I never went there. The common cowbirds live over there. They build their nests on elks' and deer horns; they specially live on elks because our elks have horns right out on the backs of their heads." "People don't like to ride on the elks because they are afraid the cowbirds will peck them. It's a little scary for the cowbirds when the elks have fights—they have to hop out."

"The Dinosaurs are about a mile big and a mile high. You can't see their necks—they are so high."

Although E originally said she had ten children, there were only three of whom we heard any details. One was a baby named Joan; monkeys cared for her and she drank deer's milk. The two eldest children were "Harper, Queen of the Birds," who sent Passenger Pigeons hither and yon, and "Eagle Terror," a great hero. After the middle of January she mentioned her family or home only occasionally; usually it was to tell of their superiority to D's family when the latter remarked on the marvels of her relatives. For instance, in March, D said, "My husband is as strong as an ancestor." E boasted, "My husband is so strong he can lift the world with one finger." "How large is he?" I asked. "As large as Father. He got strong by taking exercise."

This last imaginative period was brief and not so absorbing as the others, yet there was considerable originality about it. She attempted to describe a paradise, at first with the idea of excelling her sister's Utopia; the general subject was thus determined and various details were suggested for she had to show her superior wisdom and experience by exaggeration of or contrast to what D told. Her descriptions as a whole had little relation to D's imaginations; once E was started she simply followed her fancy in inventing curious beasts and birds. Her ten children were far less interesting to her than her natural history; the helpful Bag and Pincushion Birds that were so disturbed by the frightful "singing" of the snakes, the venomous Tree Turtles, the extraordinary elks and cowbirds, the enormous Dinosaurs that tramped upon unwary travelers and various other creatures which I have had to omit for lack of space.

## THE FIFTH INTERVAL

*Six Years and Seven Months to Eight Years and Six Months.  
February, 1917, to December, 1918*

This interval was the longest of all—nearly two years. E had two short school experiences of one month in June, 1917, and two months in the fall; otherwise her environment has been much the same as before. She has developed into a great reader.

She told only fifteen stories during the twenty-two months; these were distributed as follows: one in April, 1917, two in September, one in November, one in December, three in January, 1918, two in February, two in March, one in April, one in May and one in August. There is a slight indication of January's stimulating effect, especially as at this same time she composed three "poems," while during the other twenty-one months she only improvised two songs and made up two rhymes. There is more of adventure in these stories than in the previous ones.

## FIFTH PERIOD OF IMAGINATION

## HER STARS

*Eight Years; Six, Seven and Eight Months. December, 1918,  
through February, 1919*

This last imaginative series was stimulated as two years before by D, who had invented some wonderful countries; in E's own words she had to tell about her "wonderfuller lands." I carefully cherished the first indications of imagination, asking questions, suggesting that she illustrate some of her tales and getting up a contest for us all to make little books of our lands, I myself racking my brains to remember some fantastic countries I had thought up as a child to while away the hours of church. I also got a blank book telling E she might make pictures of her lands and I would write down her descriptions. This was started but never finished. Whatever influence this encouragement had, her imagination has flourished for nearly three months and is still continuing. The children's greatest interest in life has been for several months exciting play with their toys and dilapidated dolls, much as it was in December, 1916.

The subject of this series, which started December 10th, is something like that of two years previous—imaginary countries, but this time there are many more varieties. She tells of the Moon, Mars, her own special Star, a Cattle Star, Bird Star, Number Star, Letter Star, Glasses Star, Flower Star,

Wish Land, Land of the Hundred Suns, Land with No Gravity and many others. I have space to mention only a very few items that she has told.

At her own Star she has the following kinds of birds: Doily Birds, Lace Birds, Turn Over Pigeons, Gold Birds, String Birds, Rock Bound, Oogloo-Pants, Long Bills and others. In explaining a picture she was making of the Long Bills, she said:

“The mate sits and listens and cries with joy to think her husband can pipe so sweetly. Sometimes the birds get up from their nests to sing and almost let their eggs get cold. The whales come up to hear them sing.” “The Father Long Bill doesn’t do much but sing, because his babies are very wakeful. Sometimes he has to sing all night to get them to sleep. Just about as soon as he stops they wake up and squawk.”

“Everything flies at my land, even nests.”

At Mars there are Monkey People with tails as long as our dining room; these tails are used to hold extra shovels when they dig canals. Rats as large as chairs infest the canals; their tails are electric lights that are lighted at night. They bite the tails of the Monkey People. E left some of her Bagalog Animals to eat the rats; they have lots of tails like fly whackers, when flies settle on them they kill them with their tails.

The lions on her own Star sometimes leap over to the Cattle Star and the alarmed cattle rush to the “Paste Pool” in the middle of their woods, stick in their hoofs, get them sticky and then climb trees, but the lions can’t climb. However, there are not enough trees to go around so the rest of the cattle hurry to the “Knife Pool” that puts sharp knives on their hoofs and then they rush at the lions and cut them in their faces.

E’s greatest affliction in life is her number work. “In the Number Star there are lots of Numbers. They sit down on papers and ask me how many’s what.” “What happens if you don’t answer?” I asked. “They pinch me. I don’t like to pick them up—they’re sort of buggy things. My animals eat up the Numbers. Last night when I wanted to get some bats from the Number Star to introduce into my country to eat the mosquitoes (there are a few mosquitoes there), one of my animals got behind me—eating up the 3’s and 4’s—and I got a terrible pinch by those bad 3’s.” “My animals tried to eat a great big thousand and they got such choky times.”

“What happens if you do answer?” I asked.

“Then they go dancing about. Sometimes they give me a little bit of candy.” “You don’t dare lie down in the grass very much for fear of the 4’s; they sit in the grass and prick.”

The 1's and 4's prick her when she sits down on them, the 6's, 3's, 9's and 2's pinch and the 7's just dance and laugh. They sing "Pinch her, pinch her," although they can't do it themselves. Zeroes sometimes help her by telling her the answers.

"It's a very bad star." "I wouldn't ever go there if it wasn't for the bats and beautiful birds."

E began this series December 10th and told something every day until the 19th; then she said nothing more till the 31st, when I mentioned the subject. She told about her lands practically every day in January and on an average every other day in February, the accounts in January being longer and more detailed in general than the later ones. Her imagination was most intense in January, but there still seems to be much impetus left at the date of writing—February 28th.

In these lands E has no relatives nor indeed are there any people but Indians. The general character of her tales is description of the appearance of each strange land, of its fauna and flora and an account of the habits of particular creatures, whether they be fish, flesh, fowl, or, often enough, some extraordinary invention, such as Canpics, Glass Pip-pips, Kath-apapamamas, Kick-kicks, and so forth.

#### DISCUSSION

Many children appear to have difficulty in distinguishing their fancies from reality. This does not seem to have been the case with E; she is a clear thinker and apparently has always known that her stories were merely made up with the possible exception of her imaginary possessions at the age of three and a half. All her other tales have been such impossible things that they could not be confused with reality; it is probably when a child's imaginations are near the truth that confusion is liable to occur.

All of these imaginations are, of course, based on her experience and differentiated from real life by the factors of new combinations, contrast and exaggeration.

The babies, the imaginary possessions and the first kind of stories are more or less close reproductions of reality. There is considerable exaggeration in the later exploits of the Babies. By new combinations, i. e., by substituting animals for herself she changed a recital of her own doings into the first kind of story. New combinations of stories heard produced the second kind of story.

The main series of imaginations may be tabulated as follows:

Age	Subject	Kind	Characters
3½	Babies	Imaginary Companions.	People.
3½	Haneater	Life History, Adventures.	Imaginary Bird.
3½ to 4	Stories	a. Her own Experiences with Animals as Actors. b. New Combinations of Stories Heard.	Animals. Animals and People from Stories.
5	Bow-wow and Larvee	Life Histories, Adventures.	Imaginary Animals.
5½	Housekins	Life Histories.	Imaginary Creatures neither People nor Animals.
6½	Her Home	Life Histories.	Imaginary Animals, Birds and People.
8½	Her Stars	Life Histories.	Imaginary Animals, Birds and Creatures.

The Haneater, the birds and animals at her Home and her Stars and of the various "life history" stories told at intervals from the age of five, are, of course, based on what she knows of real birds and animals but made decidedly different by the use of contrast and exaggeration. Bow-wow and Larvee come partly in the same class, especially the stories of Larvee's Babies.

The Housekins and some of the inhabitants of her Stars are the most original of all the imaginations. It is more difficult to classify them than the others, but still they are new combinations of things that she knows, treated by the methods of contrast and exaggeration.

There is little of the element of adventure in most of her tales. The second kind of story, the accounts of Larvee and Bow-wow and the isolated stories told from the age of six and a half to seven and a half show it to some extent. The greater importance of adventure in the Bow-wow and Larvee tales might have been partly due to the fact that sometimes, especially at first, she played with the toy Larvee and Bow-wow and thus might have got into a habit of having them do things which persisted even when she was merely telling about them. Her play at the present time is full of action, her toys experiencing a bewildering succession of astonishing adventures.

As a rule she has not liked to have the characters in her

stories bad—although it happens often enough in her play—sometimes she began them that way and then, upon developing an interest in them, changed them. This was true of the Housekins and of two of her latest tales, and also of an unpleasant character in one of my stories—vainly intended to point a moral—whom she transformed into a nice person.

People are unimportant in her tales; they hardly come in at all after the very beginning, when she had her imaginary companions, the Babies. E is not a sociable child, but she is fond of babies. Her love of nature is shown both by the preponderance of bird and animal characters in her stories and also from the general nature of most of them, for they are largely descriptions of the habits of imaginary birds, animals or other creatures.

In one set of imaginations—the stories told from three and a half to four—the stories are directly traceable to their sources, practically the only change being new combinations. In none other of her imaginations is it possible to trace more than small incidents here and there to definite sources.

The starting point of many individual stories is known. After E was five a picture that she happened to draw would often suggest a story to her, yet a picture never started a series of imaginations.

The immediate stimuli to three of her series of imaginations are known; the tales I told of Ducky Daddles started her on the Bow-wow and Larvee series, D's boasting of her home in November, 1916, stimulated E to imagine a rival home, and much the same thing was repeated two years later. Yet a similar stimulus in October, 1915—D's farm—evoked only a single story from E. It seemed to depend not so much on stimuli, judging from the countless numbers that received no response, as on the creative mood of the child..

#### PERIODICITY OF HER CREATIVE MOODS

One of the most interesting phases of this child's life of imagination has been its marked periodicity. Most of the time she has seemed almost devoid of imagination; no amount of encouragement would call forth the glimmer of a story; at other times she has been full to overflowing with creative imagination, some of her fancies crowding most other thoughts and interests from her mind.

The periods of imagination and the intervals between them are here summarized in relation to the season and also to E's place of residence.

## TIMES OF IMAGINATION

Age in Years	Period or Interval	Time of Year	Height of Imagination	Duration	Place
3 $\frac{1}{2}$ to 4	1st Period	Nov. to June	Dec. & May	7 mos.	Oklahoma
4 to 4 $\frac{1}{2}$	2nd Interval	July to April		10 mos.	Mass. & Oklahoma
4 $\frac{1}{2}$ to 5	2nd Period	May & June	May	2 mos.	Oklahoma
5 to 5 $\frac{1}{2}$	3rd Interval	July to Nov.		4 mos.	Mass. & Oklahoma
5 $\frac{1}{2}$ to 6 $\frac{1}{2}$	3rd Period	Nov. to Jan.	Dec.	3 mos.	Oklahoma
5 $\frac{1}{2}$ to 6 $\frac{1}{2}$	4th Interval	Feb. to Dec.		11 mos.	Mass. & Oklahoma
6 $\frac{1}{2}$ to 7 $\frac{1}{2}$	4th Period	Dec. & Jan.	Jan.	1 mos.	Oklahoma
6 $\frac{1}{2}$ to 8 $\frac{1}{2}$	5th Interval	Feb. to Dec.		22 mos.	Mass. & Oklahoma
8 $\frac{1}{2}$ to 9 $\frac{1}{2}$	5th Period	Dec. to Feb.	Dec. & Jan.	3 mos.	Oklahoma

The unimaginative periods have been much greater in extent than the imaginative. From the age of three and a half to eight and a half there have been sixteen imaginative months and forty-seven unimaginative, three times as many of the latter. If we count from the age of two and a half, there have been fifty-nine unimaginative months or nearly four times as many as the imaginative.

As to place, her visits in Massachusetts all fall within the intervals between imaginative periods. The Babies, the Han-eater and the Housekins were begun in late November, while the accounts of her Home and her Stars were started in December. The first three series reached their climax in December and the last two in early January. Bow-wow and Larvee were begun in May and reached their climax in late May and early June, as did the first stories. Between the ages of three and a half and eight and a half, four Decembers and two Junes have been highly imaginative, while two Decembers (when she was four and a half and seven and a half) and three Junes (when she was six, seven and eight) were unimaginative. She went to Massachusetts in early spring before she was six and before she was eight, and no series of imaginations were ever started by her in Massachusetts.

What is the explanation of this striking seasonal appearance of her imaginations? Only twice did November or December miss stimulating her creative powers, and only once a May spent in Oklahoma. She has never been imaginative in late summer and early fall, and only slightly so in late winter and early spring.

Huntington<sup>8</sup> in "Civilization and Climate" found that the energy of factory operatives in Connecticut was "very low in January, moderately low in July, high in June and very high in November." p. 64. He bases upon extended data the con-

<sup>8</sup> Huntington, E. "Civilization and Climate." 1915. *New Haven*, 333p.

clusion that "Both physical and mental activity reach pronounced maxima in the spring and fall, with minima in mid-winter and midsummer." p. 82.

This child's periods of imagination correspond almost exactly with Huntington's discoveries of the effect of climate; they tend to come a little later in the fall and a little earlier in the spring than his periods of maximum energy, which would be natural in Oklahoma with a climate warmer than New England.

#### FAVORABLE AND UNFAVORABLE INFLUENCES

What conditions are conducive to creative moods and what are unfavorable to them? We have found a little light on the subject so far as this child is concerned.

Interest in real life did not encourage her imagination; her imaginative periods always began when there was little social stimulus and no particularly exciting things to do; and three times they were brought to a sudden end when conditions were changed in this respect; imaginary possessions and the Han-eater were stopped by the first Montessori school, while her early stories and Bow-wow and Larvee came to their ends when she went to Massachusetts two different summers. Twice Christmas made a break in her periods of imagination; she told stories about the Housekins from December 11th to 16th and began again the 26th; she told about her Stars from December 10th to 19th and began again the 31st. Although her Home was started just before Christmas she told little about it until January 6th. This inhibition of imagination when real life is especially interesting is shown also in the common observation that a child with brothers and sisters near his own age is less apt to live in a world of make-believe than an only child.

As to cultural stimulus there was little of it before the first period of imagination and the same was true during the long unimaginative interval a year later, while before all the other imaginative periods and during most of the intervals she has heard a great many stories and poems. Thus there seemed to be no correlation between cultural stimulus and imagination except in one case, when a too absorbing story—Lady Gregory's "Cuchulain"—appeared to inhibit imagination.

E has not been influenced by the criticism of an older child, but she has been decidedly stimulated by emulation when she invented her Home and her Stars as rivals to D's. When she based the Bow-wow and Larvee series on my stories, suggestion was probably the only factor, but in the stories of her Home and Stars both suggestion and emulation were operative.

It would appear that climate had a definite effect on the mental activities of this child; as the weather grew cooler in the late fall, and again became warmer in the late spring, her creative powers were stimulated. She would seem to be especially sensitive to the effects of seasonal changes, for I do not presume we would find this same periodicity in most children; D has not shown it.

What has brought her creative moods to an end? Three times they were apparently stopped by an increase in the interest of real life, while twice—the Housekins and the Home—they gradually became less and less absorbing, although no special change in environment took place. They all came to a close in the seasons when climatic energy is at its lowest—midsummer and midwinter. While increase of social stimulus and the climatic factor might have been influential, on the other hand, this decline might simply have been due to the fact that the interest-in imagination had run its course and she was ready to take up some new phase of mental activity.

That the creative moods of this child have depended to some extent on surplus energy is shown both positively and negatively; positively from the correspondence with the times of greatest climatic energy, and from the fact that the third period of imagination was noticeably a time of excess of animal spirits—threatened trouble being twice diverted into creative channels; and negatively from the inhibition of imagination by an increased interest in real life and also by a difficult cultural stimulus.

Of course this does not mean that a dull life will result in a brilliant imagination; there have been plenty of times when this child's energies were not fully occupied and yet she showed not a spark of romantic invention. But it does point to what we already know in adult life that overstimulation does not conduce to creativity; real life and companions are of course essential to a well-balanced existence, yet one also needs solitude and time to think one's own thoughts. "In the morning, solitude," said Pythagoras. "By all means give the youth solitude," says Emerson, "that nature may speak to his imagination as it never does in company."

What shall be our attitude towards this whole matter of childish imagination? In the first place, we must have the solid rock of truth as the foundation of thought. A child should never be deceived. He should be told fairy stories as fairy stories. We do not need to be in too great a hurry to instruct him in astronomy and science; let him wonder a little and ponder over nature's phenomena without their being made into tasks and lessons for him while he is little. But be sure

a child has reality to start on so that his thoughts will not get into a hopeless muddle.

How can we encourage imagination in a child that shows little or none of it? The first, and in many cases the really difficult task is to get it started, and the second to keep it going. The factors of suggestion and emulation are probably useful in the first problem and that of sympathy in the second.

Under suggestion would come the indirect stimulus of a rich cultural environment—the hearing of the best of the fairy stories, myths and legends, and the seeing of fine pictures. Yet one should guard against the child's receiving so many of other people's ideas that he has scant room left for his own. The parent can give direct suggestions by telling what she or he used to imagine as a child, what the child himself invented a year or so before or by instituting the custom of taking turns in telling stories.

In order to make use of emulation as a motive, other children are necessary. Several might be encouraged to make up stories chiefly for each other's entertainment, rather than the edification of the grown-up. The illustrating of his fancies by each child is another method of multiplying and clarifying ideas.

After a child's inventive powers have been launched on their way, the attitude of the parents should be sympathetic. His tales should be received with interest and tactful admiration—enough, yet not too much lest the child become conceited and lose spontaneity. Of course if a child's small stories or versifications meet with indifference or laughter, he will be discouraged, perhaps entirely, perhaps only driven to keeping his thoughts to himself.

Undoubtedly some children are too absorbed in make-believe. In such cases there should be a redirection of their interests, a new emphasis on the attractions of real life. This may be accomplished in many ways; by companions, pets, a new interest or wholesome change of some kind.

A child's imaginations are akin to poetry; they increase the joy of the world. Their originality and creative power contain a spark of genius and should be cherished accordingly. Unfortunately we know almost nothing of the underlying factors that govern creativity or of how to utilize them. It is only one evidence of our profound ignorance of how really to educate our children and to develop their possibilities.

## BOOK REVIEW

*The Place of The Idea of Death and Its Moral Effects in Education* (*La Muerte y su Sentido Moral en la Educación*). By FARÍA DE VASCONCELLOS. 1918 Porcel, Sucre, Bolivia. Translated by PHYLLIS BLANCHARD, Clark University.

The subject of my discourse is the problem of death as a factor in education. I desire to call the reader's attention to some wholesome ideas which this theme suggests to me, and to bring a note of vigor and forcefulness into a problem generally regarded with terror and despair.

I believe that death can be contemplated with a calm optimism. It is not necessary that when the idea of death comes into one's existence it should disturb the heart and mind to such a degree as it ordinarily does.

I am not going to analyze the different chemical and physical changes which constitute the process of death.

I am not going to analyze the process of necrosis through atrophy or degeneration. I am not going to discuss Metchnikoff's theory of old age.

This is not a scientific paper. To be sure death is a fit subject for science. But it is not merely that.

The idea of death involves something more than death. Science is not a code of absolute truths. Science is no more, can be no more, than a mass of investigatory methods.

There is something beyond biological, physical and chemical analysis. There is the moral aspect, the spiritual significance which we attach to death. It is here that we come to our inclination and longing for the infinite.

Analyze a tear chemically: a drop of salt water. That is quite correct, but that is not all.

In it there is all the imponderability of emotion, of sadness, of grief, of bitterness. It can not be called merely a chemical process, it is so much more a spiritual wounding of the heart.

It is the same with death.

It is necessary to turn away from the material aspect to the moral significance and spiritual worth which are manifested in the thought of death.

Education cannot neglect this problem.

Not to speak to youth of death is a crime; because not to prepare youth for death is fundamentally not to prepare it for life.

But to speak of a death swathed in superstitious fancies, to implant in youth a mortal terror, to poison its lightheartedness with fear, to fill its imagination with dread and despair is no less criminal than sheer neglect.

The two things to be avoided are lack of preparation and wrong preparation.

A man is not a man when he knows only how to live, but much more when he knows how to die.

If life is a duty, death is even more one.

To die in dignity, struggling, believing, suffering, realizing one's ideal or seeking for it, is to live doubly.

The youth or man who is incapable of looking death in the face, is a cowed personality; such a man or youth does not live, he is dead even while he is living.

But to one who understands that life is struggle, action, abnegation, to whom resolutions come swiftly, to whom all sacrifices, even his own, are part of life, to him life is vital indeed.

Death is the terror, the cruel enigma of egoists, of those who live for themselves, of those who know not how to consecrate themselves to the welfare of others, of those who are not quite able to give themselves completely. Such people look at it with anguish, just as the avaricious miser lives in dread of the robber.

But those for whom life is more than passing and transitory, they stand alert and ready for death.

Death is the hope of slaves, of weak beings without energy, of all those to whom life is simply dragging out their existence, of all who are without aspirations and ideals, and in whom life approximates a purely animal existence, of those whose souls are no more than the shadow of real souls.

But for those whose spirits are more than the echo of others, for those who climb to the heights, for those who possess a clear consciousness of the meaning of their own life, for those who have a sanguine ideal of life, death has no terrors. And if they do not desire death, neither do they shun it.

For those who hear deep within their souls the call of idealism, death is not annihilation. It is a means of creating an example for others who shall come after them. The history of mankind is the history of those who have died for an ideal, and not of those who have obstinately clung to life.

Death is inevitable, it is a necessary concomitant of life. Without it, renewal of the racial stock would be impossible. Therefore we can formulate the pedagogical axiom that we must always teach the child and youth to accept this inevitable end with all their being.

High morality does not consist of vigor and force alone, it embraces also acceptance and resignation.

Or, better, morality is an heroic fighting strength, united with resignation to the result of the combat.

Moreover, to be resigned to the inevitable, to accept it, to bow before fate, bears a more heroic semblance, betokens a greater soul, than agitated and futile gestures of violent imprecation, of hopeless struggle.

To train the child and youth in the practice of this moral stoicism, this courageous resignation, to teach him to accept with calmness and tranquillity, those things which are necessary and inevitable, is to give him the best preparation for life. And of all necessary and inevitable things, the greatest is death! And this applies not only to actual dying of the entire individual, but of that series of deaths of the component parts of a personality which are involved in the process of adjustment to the realities of life.

Who will deny that there is this series of deaths before death of the whole being comes? And how many of these smaller deaths there are! Some of these impose harsh sacrifices, cruel penalties, grievous renunciations.

They are real men who can meet these littler deaths with resignation and patience, or can use them to increase their own moral strength. How many can apply the same rules to themselves as to others? How many can adhere to their decisions, and not yield to other impulses?

How many men, who cling obstinately to their beliefs in life, will change to others at the approach of death? How many artists, thinkers, business men persist in their faith and do not lose spirit at the sight of death! How many cannot resign themselves to relinquishing their power, to renouncing the possessions which belong to them! How many are reluctant to pass on into other hands the torch of life which they bear!

How tragic is the contest of the dead with the living! It is necessary to know how to die.

But there is something further,—if death is sure, the hour is uncertain. It comes when least expected. Hence it follows that one must always be ready for death, must always have a clear conscience. It is necessary, too, to work with energy and perseverance all the time to fulfil our mission upon earth, because to-morrow may be too late. How many idle hands leave for to-morrow what they could be doing to-day!

So short is the time for all of us, that the condition is imposed not to lose any of it, or to use it wrongly. How many who might be doing some very useful work—death surprises in the midst of indecision, of vacillation, of empty pleasures in neglect of their duties. To desire strongly is to desire all the time, with no interruptions. To live fully is to put every hour of our existence at the service of the ideal which is the dynamic force of our life. To live is to advance unwaveringly, with firm step, toward the goal which we have set for ourselves.

Life cannot be an improvisation, because the hour of death is uncertain. We must always be ready. We must realize that each hour may be the last. At any moment, the life which pulses in us may cease, to animate us no more!

We must admit all these things without dismay, but with a firm and calm decisiveness. To-day may bring death to me,—but whenever it comes it cannot surprise me! And this ideal of conduct can only be achieved if every hour, every moment, finds us at our appointed task.

The death which surprises us at our work, illuminates our life, and such a death is the acme of life. It is necessary to know how to live, in order to know how to die. And to die alone, without any hope falls only to the lot of those who have lived purposelessly.

To many there is something painful about the idea of death. If individually they are ready for it, prepared to accept it as inevitable with all calmness, they suffer acutely and despairingly when it comes to those who are near and dear to them. Their pain and unhappiness, their real bitterness, is deep. And of all the sorrows which death suggests, this is the greatest and most unbearable.

Something can be done to alleviate all this, however. Education, by training the individual to have a sane conception of death and of the dead, can accomplish a great deal for this.

No less suggestive is a recent book by Maeterlinck, "The Ruins of War." There is a chapter entitled "The Life of the Dead." One day, the author visited a widow who had lost her only son in the battle of Argonne. His widow, almost impoverished, with their child, their pride and joy, had disappeared; there was no reason to believe them living. Maeterlinck, who had expected to find himself in the presence of one grieving without hope, nursing a sense of injury and bitterness, says:

"In her eyes there were no tears. She smiled as do those who are filled with a happiness which nothing can mar. To-day we know there is no death. It has been demonstrated that those who have fallen

were never more alive than now. They are not forgotten, love has surrounded their sepulchre and has transfigured it creating for them a life more beautiful, more ardent, and of more far-reaching influence, which nothing can ever destroy. To lament for them would be a disgrace to the mothers, and so they do not weep, but smile in a silence which no one understands."

In the presence of such mothers, who can doubt that the dead still live? Of what avail is cold reason? Whom shall we follow,—those who believe that the dead are dead forever, or those who feel that somewhere, somehow, they are still alive? The dead whom we love do not die; they live on in us.

It is reasonable to decide, with Maeterlinck, that there is only a superficial difference between the living and the dead. There is the ever-present memory, living in our heart, which enables us to prolong the life of our beloved dead. There is a profound truth in Maeterlinck's story. Since those who die live on in us, we may learn to think of them without sadness, without despair, but with a happy and sincere affection.

A sane cult of the dead will not sap the vitality of those left behind, on the contrary it will encourage them, and nerve them for greater effort. Death removes from the loved ones all the defects and failings which they possessed. They come to have for us an idealized personality, to be an incentive to worthiness in our own life. Such a cult of the dead may well be prolonged. It would regenerate us, and incite us to live life fully in the present.

With this cult of the dead, we can illumine the future, we can see it more clearly, and prepare for it better, because the memory and example of their lives, thus purified, will be a stimulus and a lesson to us. We shall regard the dead with tranquillity, we shall live with them, still, and cultivate their memory in peace and confidence. To quote Maeterlinck once more:

"The material presence is not everything, and we can let it go from us without despair. We do not lament for those who live, in countries where we cannot yet go, because we know upon what our going to meet them depends. Why should it be otherwise in the case of death? We know that they are only in that region where sometime we too shall go."

Thus we conclude, by affirming that a sane, well-balanced man, who lives a physical life conforming to the rules of hygiene, who has a firm morality in his heart, who is capable of struggle, of sacrifice for an ideal, who knows the meaning and value of life, who thinks clearly, and in accord with scientific knowledge, is the man who lives forcefully, loves life intensely, and at the same time does not fear and shun death.

The conception of death depends upon the spiritual worth of our life. If our life is haunted by the spectre of death, our energy is drained in the contemplation of these gloomy phantoms which destroy our strength for action and weaken the decisive character.

To live sanely and wholesomely, means to look at death with no fear. Too many men die a thousand deaths while yet living through dread of death.

For a sound and healthful education, for the cultivation of an ideal of action and of acceptance of reality, we must be taught to live life with a creative, optimistic spirit, and we shall be able to live thus only as we can understand and regard the idea of death with calmness and tranquillity.

## BOOK NOTES

*The Distribution and Relation of Educational Abilities.* By CYRIL BURT. London, Darling, 1917. 93 p.

This is an interesting and comprehensive report submitted to the London County Council in February, 1917. It is based on very elaborate statistical data which are abundantly illustrated by charts and drafts, and which give altogether a very valuable survey of a single representative borough, by means of teachers' estimates, checked by experimental tests. The conclusion is reached that the educational attainments of a "defective" correspond, on an average, to those of a "normal" just over half his age. The total number of "backward" children in the senior departments of the borough was placed at two thousand, or about ten per cent. It appears that the highest possible limit for candidates for the statutory examination shows a retardation of at least one quarter of the age.

Scholastic achievements appear to be determined by mental factors of two kinds: (1) General and (2) Specific Educational Abilities. Allowing for the influence of the former, the school subjects tested fall into four main groups, apparently dependent on four specific abilities,—Arithmetic, Manual, Linguistic, and Literary.

*The Child's Unconscious Mind.* By WILFRID LAY. N. Y., Dodd, Mead and Co., 1919. 329 p.

This book treats of the relations of psychoanalysis to education, and is addressed to parents and teachers by the author of "Man's Unconscious Conflict."

It first describes The Unconscious Factor, then takes up the Interplay of Conscious and Unconscious, Partial Trends, Mechanisms, The Aim of Education, Resistance and Transference, and Emotion. The last chapter is entitled, "Conclusion. Medical Origin."

This is the third attempt in English to introduce psychoanalysis into the general field of Education, and the author is well qualified for his task, having been for some time an experienced teacher and especially a student of the Freudian literature. In these days when the unconscious is coming into the foreground in so many ways, and especially as this line of psychology gives us a new vantage ground for studying such problems as emotion and transfer, we believe this book is the herald of many others that will follow, and that it is most timely and wholesome and worthy of the careful consideration of every parent and teacher.

*Education For Character.* By FRANK C. SHARP. Indianapolis, Bobbs-Merrill Co., 1917. 453 p.

This book grew out of lectures on moral education and treats of it in the school in general. The book is divided into four parts. In the first, The Influence of Personality, is discussed the personality of the teacher as teacher and as friend, and the tone of the school. Part II, Moral Training, includes the discipline of the school, pupil government, mutual aid in class work, the service of the school, moral training through the extra-curricular activities of the school, direct

training in citizenship, and the nature and conditions of effective moral training. In Part III, which deals with the subject of Moral Instruction, the author takes up the aims of this instruction, training in moral thoughtfulness, instruction through the existing curriculum and biography, and the systematic study of the conduct of life as to methods and results. Part IV deals with the moral education in the home. The book is designed as a textbook, and the last fifty pages are devoted to exercises.

*Mental Hygiene of Childhood.* By WILLIAM A. WHITE. (With an introduction by H. ADDINGTON BRUCE.) Boston, Little, Brown and Co., 1919. 193 p.

This book does not attempt to be an exhaustive account of the psychology of childhood but only an examination from a new point of view, viz., that of psychoanalysis. It assumes that even the infant has the germs of sexuality. It discusses the fundamental instincts, the development of a child and its stages, the family situation, the problems and punishments of childhood, repression, play, the relation to parents, the historical background of the problem, and conclusions.

*Experimental Education.* By ROBERT R. RUSK. N. Y., Longmans, Green and Co., 1919. 346 p.

This book discusses the general development of the child — physical and mental — and special powers like attention, sense perception, apperception, memory, association, imagination, thinking, reasoning, and speech. This takes the first one hundred and thirty pages. Then come the chapters on the aesthetic and ethical development of the child; individual differences; endowment; the economy and technique of learning; conditions affecting mental work; psychology and pedagogy of school topics, to each of which a special chapter is given, viz.: reading, handwriting, orthography, arithmetic, and other subjects.

*The American Language.* By H. L. MENCKEN. N. Y., Knopf, 1919. 374 p.

The sub-title of this book is, "A Preliminary Inquiry into the Development of English in the United States." The author is an editor and critic, whose task it was for many years to read many papers. In this way he came to realize the defects of our language.

The author begins with colonial days and considers the source of early Americanisms, new words of English material, changed meanings, and colonial pronunciation. Under the heading "The Period of Growth" he discusses the language in the making, the expanding vocabulary, and loan-words. He then contrasts American and English of today with regard to vocabulary, usage, honorifics, and euphemisms and forbidden words. He treats of tendencies in American, the common speech and the ways of grammarians, differences in spelling, taking up the influence of Webster and the subject of simplified spelling; and, finally, proper names in this country. In the chapter "Miscellanea" he discusses proverbs and platitudes, and the future of the language. It is a concrete book of very interesting details, and it ought to be of special interest to teachers.

*The Winston Simplified Dictionary.* Edited by WILLIAM D. LEWIS and EDGAR A. SINGER. Phil., Winston Co., 1919. 820 p.

This seems to the writer of this review to be an excellent and handy work. Little space is given to margins, the words defined are printed in clear-faced type, the definitions are brief and concise, and there are many illustrations, a few of them full-page. It is difficult to see how more matter could be placed in any smaller space. There are a number of interesting and valuable appendices.

*First Lessons in Business.* By J. A. BEXELL. Philadelphia, Lippincott, 1919. 174 p. (Thrift Text Series).

This book is divided into forty sections, discussing such traits as honesty, industry, promptness, personality, enthusiasm, initiative; also thrift, saving, money, waste, success, boys' and girls' clubs, the news-boy's cash book, the business office, coöperation, partnership, what a savings bank is and how it is managed, household budget, etc.

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## VOCABULARIES

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By J. A. MAGNI

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### THEIR IMPORTANCE

“Language is the formative organ of thought,” Wilhelm von Humboldt. “In the development of each person,” says Prof. Kirkpatrick, “nothing exercises a greater influence in moulding and developing thought and feeling than his language environment. The vocabulary of a person represents in a condensed and symbolic form all that he has experienced and imagined. The breadth of his mental experience is indicated by the number of words that have for him a meaning, while the accuracy of his thinking is shown by the constancy and exactness of meaning with which he uses words.” Prof. Ludwig Geiger attaches even greater importance to language for he thinks that it has actually created human reason and intelligence. “Every word,” says J. G. Fitch, “which has been invented is the record of some fact or thought, and furnishes the means by which facts or thoughts can be transmitted to others. In a sense every new word represents a new conquest of civilization, a distinct addition to the intellectual resources of the world.” Prof. Max Mueller says: “No human being utters articulate sounds without an object, a purpose, a meaning. The endless configurations of sound which are collected in our dictionaries would have no existence at all, they would be the mere ghost of a language, unless they stood there as the embodiment of thought, as the realization of ideas.” But the living winged word is like consciousness itself, ever changing,

reflecting, as it does, a mutable world. "Language exists in man," says Prof. Mueller, "it lives in being spoken, it dies with each word that is pronounced and is no longer heard." Therefore, in order that its content, the idea, may not perish it must be given a permanent form, the written word, without which civilization would still be quite primitive.

Prof. S. S. Laurie recognizes the importance of giving the child a good vocabulary. "For adding to his (the child's) stock of understood words," he says, "we add to his stock of understood things, and consequently, to his material for thought, and to the growth of the fabric of the mind." Pres. A. R. Taylor, referring to children's vocabularies, says: "Their knowledge and vocabularies grow at approximately the same rate and revealing also the function of language in knowledge-getting." The great orator whose choice, cogent words, pregnant and beautiful language, charm, convince and hold spell-bound his audience is invariably a man of large vocabulary. "Precision, clearness and elegance of diction," says E. W. Doran, "are impossible with a man who has a limited vocabulary."

It is impossible to deny the value of a large vocabulary, provided every word stands for a living, clear-cut idea. Otherwise it will be only so much dead mental baggage. Right here it is apposite to lay one's finger on a serious defect in our modern education, viz., the haziness in the student's mind of the meaning of words. This holds true in the graded schools as well as in colleges and universities. Speed and quantity have become the ideal of our hot-house education. It would be well for teachers to insist on a clear definite grasp of the meanings of words. They should take to heart Blaise Pascal's injunction, "Define your terms." Failure to heed this excellent advice is apparent everywhere in modern thought. Hazy and muddy speculation, and theorizing are seen in every science and branch of knowledge. Many thinkers go so far as to spurn definition as pedantic. In an age of so much chaotic, indefinite thinking due to early superficial training, when language was formed, it is positively refreshing to find a Dr. Floyd S. Muckey in his "Natural Method of Voice Production" stressing this educational principle. "Definition," he says, "is the foundation for the whole structure of knowledge; without accurate definition clear thinking and logical conclusions are impossible. It is the very beginning of knowing and the truth cannot be reached without it. It is not only the beginning of knowledge, but is the warp and woof as well. It is the anchor which holds us to the solid ground of reason. For these reasons clear and accurate definition is of the greatest importance in

any scientific investigation. Without it we are sure to drift into a maze of idle and barren speculation."

If this principle had become a habit in early childhood, and had been maintained throughout the elementary school, high school, college and university, much time and trouble could have been avoided. Whole libraries of books could have been left unwritten, and an infinite amount of acrimonious disputes, bickerings and discussions would not sully the daily press. Accuracy is the soul of scholarship, but this ideal can never be attained without a perfect grasp of the meaning of words. Every word in one's vernacular should be valued as a most precious jewel, an heirloom symbolizing a necessary experience in the cultural progress of our race. There is nothing to which the child falls heir that can be compared to the mother tongue, because it is the conserver and bearer from age to age of a people's intellectual and spiritual wealth. Therefore, let the student acquire as soon as possible great facility in using the key that unlocks this inexhaustible treasure house.

#### SIZE OF VOCABULARIES

For a long time the estimates of individual vocabularies varied greatly, even among distinguished scholars, a proof that no careful study of the subject had been made. Those early estimates were merely wild guesses. The supposed size of the vocabularies of uneducated laborers is now found to be grossly erroneous. Max Müller, for instance, quotes an English clergyman, A. D. Orsey, to the effect that some of his parishioners used scarcely more than 300 words. Horatio Hale makes the astonishing statement that English workmen get along with 100 words. Canon Farrar once overheard the conversation of three English peasants who, in his opinion, used not more than 100 words. Prof. Wendell thinks that for every day purposes 1000 are amply sufficient. It has also been asserted that persons of fair intelligence who read their Bibles and Shakespeare rarely use more than 3000 or 4000. Prof. Salisbury quotes Mr. Laurie as saying that a child up to the eighth year "probably confines himself to not more than 150 words." Everybody has doubtless heard of Geo. P. March's estimate of Shakespeare's and Milton's vocabularies. Fifty years ago he wrote: "Few writers or speakers use as many as 10,000 words, ordinary persons of fair intelligence not above 3,000 or 4,000. If a scholar were required to name without examination the authors whose English vocabulary was largest, he would probably specify the all-embracing Shakespeare and the all-knowing Milton. And yet in all the works of the great

dramatist there occur not more than 15,000 words, in the poems of Milton not above 8,000. The whole number of Egyptian hieroglyphic symbols does not exceed 800, and the entire Italian operatic vocabulary is said to be scarcely more extensive."

But all these early estimates are wide of the mark according to later calculations. Dr. E. S. Holden basing his estimate on Mrs. Clarke's concordance of Shakespeare's works says that our great dramatist used more than 24,000 different words, and Milton, according to Cleveland's concordance, used in his poems alone, exclusive of his prose, 11,377 words. Dr. E. W. Doran in his study of vocabularies, *PEDAGOGICAL SEMINARY*, 1907, vol. 14, No. 4 supports Mr. Holden's conclusions. The latter author has also made the following estimates based on concordances of the respective authors' works, Tennyson 10,574, Cowper, 11,284, Milton, 12,800, Shelley 15,959.

Dr. E. S. Ponçot, who has read all of Victor Hugo's works in French, has calculated that in all his writings he uses 38,000 words, and in *Notre Dame*, 2 vols. there occur 27,000 different words. Dr. Holden using Webster's unabridged Dictionary, Ed. of 1852, tested his own vocabulary and found that he knew the meaning of 33,456 words. As this edition contains less than a third of the words of the latest edition his vocabulary must be much larger. The *New York Times* estimated that Rufus Choate used 11,700 words. Miss M. W. Shinn estimated her vocabulary by the dictionary method at 40,000, Prof. E. A. Kirkpatrick at 70,000 words. Messrs. Farquhar and Eastman making the same test found their vocabularies considerably larger than that of Dr. Holden. Prof. Gray and Gill estimated their technical vocabularies as comprising "a very large fraction indeed of 30,000 words."

Dr. Holden supported by Asa Gray, the botanist, and Dr. Theo. Gill, the zoologist, says that men of science know more than 25,000 names of plants and animals. Prof. Kirkpatrick has estimated that an American citizen with a common school education knows about 10,000 words, and well read college graduates and those who have pursued graduate courses at a university must know from 20,000 to 100,000 words.

The same author using Webster's academic dictionary with about 28,000 words on 645 pages had the student begin say on page 2 and made him count all the words in bold-faced type that he knew, and likewise on every fiftieth page. Then he repeated this process beginning with page 20. The results were so nearly equal that he considered this method fairly accurate. In this way he obtained for pupils of the different grades the following figures:

Grade II .....	4,480
Grade III .....	6,620
Grade IV .....	7,020
Grade V .....	7,860
Grade VI .....	8,700
Grade VII .....	10,660
Grade VIII .....	12,000
Grade IX .....	13,400

For high school students the figures were as follows:

Freshman .....	15,640
Sophomore .....	16,020
Junior .....	17,600
Senior .....	18,720

For normal school students he estimates the average at 19,000, and for college students 20,120.

A New York paper claims that a business man's vocabulary amounts to about 3,500 words. Dr. Doran counted the words used in a large number of business letters, pertaining to many kinds of business, and the number exceeded 3,000, and yet he could call to mind scores of words denoting articles of merchandise not found in these letters. "If the names of all the principal articles of commerce," he says, "were included, the number would be doubled."

Generally speaking the vocabularies of all civilized languages have grown enormously since Shakespeare's and Milton's day. It is safe to say, however, that no age has witnessed such a growth of vocabularies as the last 50 or 75 years, a phenomenon due chiefly to scientific research and the consequent expansion of industries and commerce. This fact necessarily leads to a general growth of individual vocabularies.

#### ACTIVE AND PASSIVE VOCABULARIES

A person's vocabulary is naturally divided into two kinds, the active and the passive. The former consists of the words that an individual has at his tongue's end in speaking and writing a language, the passive contains those words that he can understand when he reads or hears the language spoken or read. The latter is always much larger than the former. Although it is very important to make this distinction only a few teachers do so. As a result much time and energy are wasted in our schools.

The majority of students in our American high schools and colleges choose a modern language for the purpose either of getting a certain number of units of credit for graduation, or

of acquiring a reading knowledge of it. Now, since a passive vocabulary can be acquired in much shorter time than an active, why should they be compelled to acquire the latter for which they will have no use?

All teachers who employ a conversational method, including the much-lauded Direct Method, fail to see the unreasonable and impractical in their procedure. In Europe there may be some excuse for such an indiscriminate use of that method. There the study of a modern language is begun at the age of eight or nine and continued without interruption, for eight or nine years. Furthermore if we bear in mind the fact that our students begin nine years later or at the end of adolescence, the unwisdom of using the same method should be perfectly clear especially as we spend only one half the time on a modern language that the Europeans do, and often much less.

When we begin, the age of adolescence is passed. We seem not to be aware of the momentous physiological and psychological changes that took place during the preceding eight or nine years. Every teacher should know that mutation of voice occurs at the age of puberty reducing the flexibility and plasticity of the speech-organs, and also rendering the ear less capable of detecting slight shades of sound, syllabic and sentence accent and musical inflexions. Another even more important fact, also overlooked or ignored by the enthusiastic advocate of the Direct Method, is the fixity of the vernacular symbols, and the syntax of the native tongue, especially of the idioms, attained at the end of adolescence. The mind has now received its definitive linguistic form, and the unique, intimate and deep feeling for the mother-tongue, that nothing can ever replace. As a result the student learns the foreign language by passing through the native equivalents.

Pres. G. Stanley Hall, a Nestor among American educators and *savants*, and a man whose power of psychological introspection is perhaps unrivalled, tells us that whenever he reads German, there is a subconscious translating devil who never rests satisfied until the German thought-form has been changed into correct idiomatic English. The truth of my contention receives added force when we recall Pres. Hall's own statement that he has read more German in his specialty during the last thirty years than any other language, nor should it be forgotten that he spent a few years as a student in Germany.

The slight chance for American students of acquiring an active vocabulary and the facility to speak the foreign language becomes perfectly apparent if we consider the large classes, forty, fifty or sixty members. With seventy-five or eighty recitations of fifty minutes each per semester, it can readily

be seen that the time allotted to each student for the exercise of the speech-organs is practically *nil*. Furthermore, outside the modern language class-room, the student hears and speaks only English. The plain truth is, in spite of the astounding results of the Direct Method, that a native American who began the study of French, for instance, at the age of eighteen or twenty, even if he has spent a year or two in France betrays his nationality by his foreign accent, his use of prepositions, idioms, sentence accent, musical inflexions, etc. The trained native ear cannot be deceived, as some advocates of the Direct Method believe. But the same is true regarding the foreigner who tries to speak English.

Now, since the chief aim in studying a foreign language in this country is to acquire a reading knowledge, our students should be divided into two main sections. First those who desire access to the foreign literature only, and secondly those who wish to master both the spoken and written language. To insure real success in this study neither the one nor the other division of students should be admitted without a thorough analytic knowledge of the native grammar. The actual ignoring of this rule at present is the cause of the wretched results in our Modern Language classes. Let this plan be adopted because it is the most scientific, economical, and so will prove the most satisfactory.

#### PRIMITIVE VOCABULARIES

As a result of extensive investigations, it is now perfectly clear that earlier estimates were wide of the truth. Civilized man is apt to look upon his primitive brother as, in every respect, inferior to himself. It is natural to suppose that his untutored mind contains very few ideas. It has been thought that a few hundred words would be quite sufficient to express the objects and activities pertaining to his daily life and subsistence. Primitive man has generally been regarded as a great ignoramus, whose brain tracts lay practically fallow. But the linguistic anthropologist has finally made an end of this fiction. The native American languages have been studied and dictionaries of many compiled. We are, therefore, able to look into the aboriginal soul of the New World. We are greatly surprised. Instead of being limited in words and modes of expression, the aboriginal languages are rich both in form and content. Prof. Daniel G. Brinton, in his Essays of an Americanist, compares the Mexican vocabulary of Molina containing about 13,000 words, and the Maya vocabulary of the convent of Motul numbering 20,000 words, with the English dictionaries of the same period viz., the latter half of the 16th

century, before Spenser and Shakespeare wrote, and finds this comparison "not disadvantageous to the American side of the question." Prof. A. F Chamberlain of Clark University basing his estimates upon the following dictionaries of Indian languages obtains these striking figures:

- Navaho (Mathews 1891) 10,000.
- Cree (Végréville 1865-1879) 17,000.
- Montagnais (Végréville 1891) 18,000.
- Dakota (Riggs 1852-188-) 20,000.
- Cegiha (Dorsey 188-) 20,000.
- Blackfoot (Maclean 1887) 25,000.
- Tuskarora (Hewitt 1886) 30,000.
- Micmac (Rand 1849-1894) 30,000.
- Yahgan (Bridges 188-) 40,000.

A. G. Morice a student of the Déné languages says that the carrier tribes vocabulary contains 150,000 verbal terms, an astonishingly large number if correct. But it should not be overlooked that these large numbers do not necessarily indicate the existence of a corresponding intellectual wealth. Many of the words in these primitive languages are really useless, since they add nothing to the thought of the people. As an example may be given the numerous pronouns in the American languages. In some a different pronoun is used for different states or conditions in which the person may be, for instance, whether he is sitting, standing, lying, etc. The student of primitive words soon discovers the concreteness of their meanings thus revealing the psychological fact that the evolution of thought is from the concrete to the abstract. Nevertheless it is indisputable that primitive vocabularies have been greatly underestimated.

#### CHILDREN'S VOCABULARIES

The physical and mental development of children differs greatly in different individuals. Consequently their vocabularies vary a great deal. Prof. Preyer says that he did not learn to speak till he was about three years old. A few children are on record as having begun to talk at eight months of age. M. W. Shinn says that the baby she studied had, when eleven months old, 84 words in all, consisting of 51 names of people, 28 action words, and some adverbial expressions. These words were securely associated with ideas. But there have also been children, even of average intelligence, who could not speak before they were six or seven years old.

There has been a great diversity of estimates regarding children's as well as adults' vocabularies. Prof. Laurie in

his "Lectures on Language" makes wild guesses. In the first edition he holds that a child up to the eighth year uses 150 words, in the second edition, 200 or 300, in the fourth edition, from 400 to 500. Either as a general or average estimate this is wrong. Later and accurate counting of the words has disproved these early guesses.

William Canton, basing his estimate upon a careful study of the vocabulary of a girl six years old, credits a child of that age with a command of 2,000 words. E. S. Holden counted the words actually used by his three children under two years of age, excluding all doubtful ones. The first two knew together more than 500. His first child, at the age of two, used 483 words, the second 399, and the third 172. M. C. Gale and H. Gale, using the material gathered by Prof. and Mrs. West of the University of Minnesota in the study of their own daughters Ruth and Margaret when respectively two years old, found that the former used 614, and the latter 578. E. B. Doran finds the average of a two-year-old girl to be 400. Prof. E. A. Kirkpatrick says that the words used by a two-year-old child vary from a few to 1,000, and he thinks the more usual number is from 200 to 400. He bases his estimate upon a very thorough study of the subject. Prof. W. T. Preyer studied the vocabularies of nine children. The smallest vocabulary consisted of 50 words, the largest of 1,121. Each of the other seven children used from 400 to 500 words.

Of course, as already intimated, there are great differences. Viola Olerich, for instance, a prodigy known as "the famous baby scholar," was examined by a committee of school teachers when she was one year, eleven months and twenty five days old, and it was found that she knew 2500 nouns. The committee estimated that she knew at least 500 more nouns making 3,000 altogether. Therefore, she must have known between 4,000 and 5,000 words since the committee did not include any other parts of speech that she naturally used. Excluding, then, individuals phenomenally gifted, it seems that the average vocabulary of a child four years old must be four or five hundred words, as established by careful and extensive studies up to the present time. It is quite improbable that future investigations will materially change this figure.

#### CHILDREN'S VOCABULARIES ACCORDING TO SEX

Dr. E. W. Doran has made a thorough study of children's vocabularies both in infancy and during school age, and with reference to sex.

The result of his investigations tends to prove that in earlier infancy the girls use more words than the boys. The average

number of words for the 48 boys he studied is 531.4, and for the 63 girls 404.3. This would seem to favor the boys but it is only apparent. For the average age of the boys is 27 months, while that of the girls is only 23. The boys are therefore four months older. Ten of the girls, or 15.8 per cent., are over 24 months old, while 20 of the boys, or 41.6 per cent., are over 24 months old. Two periods especially of the time studied make possible a somewhat definite conclusion. At 24 months 8 boys have an average of 367.2, and 16 girls an average of 573.1 words. Thus the girls excel by 206 words, or 56.1 per cent. At 30 months of age 5 boys average 838 words, and 3 girls 1,109.3 words, an excess of 30.9 per cent.

After the 24th month it is difficult, on existing data, to ascertain the exact relation of boys and girls, but Dr. Doran thinks that up to the fifth or sixth year the girls surpass the boys. After this, as we shall see presently, the relation is reversed.

A test was made in a village public school, Edmond, Oklahoma, of boys and girls of the 6th, 7th and 8th grades, and the result was:

#### COMPARISON

6th, boys 5 months younger know 798 more words than the girls.

7th, boys 6 months younger know 808 more words than the girls.

8th, boys 20 months younger know 574 more words than the girls.

But a test in an Arkansas public school was in favor of the girls. The test included 44 girls and 22 boys. The girls proved better students than the boys.

A test of all the students of the Oklahoma Normal School gave the following results:

First-year boys knew 4 per cent more words than girls.

Second-year boys knew 11 per cent more words than girls.

Junior boys knew 21 per cent more words than girls.

Middle boys knew 20 per cent more words than girls.

Senior boys knew  $\frac{1}{2}$  per cent more words than girls

All classes boys knew 11 per cent more words than girls.

#### OTHER TESTS

About 50 students, nearly equally divided as to sex in the Kansas Normal School, at Fort Scott, were tested. The young men averaging 2 months younger knew 10 per cent more words than the young ladies.

In the Clinton Normal School, Clinton Mo., about 20 stu-

dents of each sex were tested. The men 14 months younger knew 7 per cent more words.

In Kay County Oklahoma Summer Normal, 2 classes of teachers about 25 in each, were tested. First-grade teachers 6 male, 20 female; the men 4 yrs. younger knew 11 per cent more words. Second-grade, 5 male, 20 female; the men were 2.6 yrs. older and knew 30 per cent more words.

In Oklahoma County Summer Normal, 72 teachers were tested, 26 male and 46 female. The men knew 26 per cent more words. A few, but not satisfactory tests, have been made that favor the young women.

A test of the children in the public schools in Jackson, Miss., white boys 114, girls 109. The boys averaged 2.2 months younger, and knew 5.8 per cent more words; colored, 39 boys, 76 girls. The boys were 11.5 months younger and knew 3 per cent more words.

*Summary:* In all the tests reported by Dr. Doran we find the following facts: The students of eleven schools have been tested (including teachers, summer normals) and thirty-four classes were examined. In the eleven schools tested as to sex, males made the higher record in eight of them. In the thirty-four classes males made a better record in 22. In the Jackson schools the boys made the highest total average in the white schools.

As regards native and foreign born children, tests made in Minnesota and Kansas schools show that the native made a better record.

A noteworthy fact is that Irish girls use more words than the Irish boys even after 6 years of age.

The results of Hartman's tests at the Annaberg schools in Germany also show that before six years of age the girls excel the boys, but after six it is the reverse. Pres. G. Stanley Hall's careful and extensive tests of Boston children in 1880 show that the boys knew more of three fourths of the concepts than the girls. Dr. Hall says: "In 34 representative questions out of 49 the boys surpassed the girls, as the German boys did in 75 per cent of the Berlin questions." He furthermore makes the following explanation: "The greater the number of concepts in the test lists, the more boys seemed to excel girls. The easy and widely diffused concepts are commonest among girls, the harder and more special or exceptional ones are commonest among boys."

*Exceptions to This Rule.* In the south the girls seem to excel the boys during the entire public school course as may be inferred from Dr. Doran's tests. This is true also of the Irish girls. How are these curious exceptions to be explained? One

reason perhaps is that the southern girl develops earlier, and is more precocious than the boy. Furthermore, she is more out of doors, a fact that contributes more than anything else, in childhood, to increase the stock of ideas. In the plastic and intensely active period of childhood there is certainly no better place in which to live than the country. The child is only capable of appropriating concrete ideas, a process which is abundantly facilitated in a country environment. Dr. Hall's study in 1880, "The Contents of Children's Minds on Entering School," proves this. He prepared a list of words denoting wild and domestic animals and birds, trees, plants, flowers, insects, parts of the body, woods, hills and meteorological phenomena, etc., such as school children are supposed to know. These they were required to define. Regarding the result of this test of Boston children Dr. Hall has this to say: "For 86 per cent of the above questions the average intelligence of thirty-six country children, who were tested, ranks higher than that of the city children of the Table, and in many items very greatly."

Her precocity and more extended out-door life, then, may account for the southern girl's superiority in the use of words. Her northern sister stays more in the house and is a great part of her time busy playing with and talking to her doll, which of course requires a very limited vocabulary.

But it may be asked why the Irish girl differs from the American in surpassing the Irish boy even during school age. It is supposed to be due to the naturally slow development of the latter and his innate sluggishness. The national Irish wit is said to have evolved very slowly and so, according to the biogenetic law of recapitulation, the individual's intelligence, and mental alertness would likewise develop slowly. It may be said that this applies to the female also, and so it does to a certain extent, but in common with other girls the Irish girl develops as a rule faster than the boy.

But why has the boy, in the main, a larger vocabulary than the girl after the age of six? Because he is more out of doors. He sees and hears more, takes more and keener interest in all that happens in the great world just opening its wonders before him. The girl stays in the house, plays with her dolls, and the fairy-tales told her do not stir the mind like the boy's stories of thrilling adventures. He also reads the newspapers more.

#### WHERE AND HOW TO ACQUIRE A LARGE VOCABULARY

From what has been said so far it is quite clear that a rich vocabulary is desirable. For since education in the best sense means unfoldment, the highest efflorescence of the soul, the

capacity to think clearly and cogently, to feel deeply and sympathetically, and since this process of self-realization is practically impossible without words, the early and assiduous cultivation of one's mother-tongue should be regarded as a delightful task of supreme moment. It is quite safe to say that the increase of a child's vocabulary is a fairly reliable index of its growth in intelligence.

Judging from Pres. Hall's experiments on Boston children, as well as from those of many other investigators, it seems that the country is the best place for a child during that plastic and most decisive period of language formation. Pres. Hall emphasizes this fact, and, since his own childhood was spent in a rural environment of New England, he is well qualified to appreciate its beneficent influence. Every one knows how excellently he has described education in a sand-pile in his New England home. A cultured Christian home in the country is unquestionably the most ideal place, where the physical, intellectual, and ethical foundation of soul-life may be laid for the later erection of a symmetrical structure of a complete personality. Says E. Davenport in his *Education for Efficiency*: "The conditions of country life are peculiar in their contribution to health, their stimulus to personal initiative, and their fostering influence upon that spirit of individualism upon which rest our free institutions and our democratic government. The country is a good place in which to be born." In a rural environment with its multitudinous voices and endless diurnal stimuli continuously impinging on the budding soul, the solemn stillness, the mysterious whisperings of the dark, majestic forest, the free-throated warbling of birds, the murmuring brooks, and at night the impending starry vault with millions of twinkling lights, the young denizen of the world is sure to develop the rich psychic possibilities of which he is prenatally heir, if only the reactions aroused by the ceaselessly inrushing flood of impressions are wisely directed and utilized by cultured parents or experienced sympathetic teachers. Who can fully estimate the formative influence of unspoiled nature as it reveals itself amidst rural scenes! The earth is most beautiful at dawn, but very few city children then see it. Those who live in the country are mostly children of rude laborers, "whose eyes have no sight for that wonderful peace and coolness, and unspeakable sense of rest and hope which lie like a blessing on the land." And so they fail to be partakers of that "most ancient, most glorious revelation of God which appears every morning as a living reality," to use the apt words of Herder.

The country, then, is undoubtedly the best, the most ideal

environment for the acquisition of a vocabulary. But the greatest possible stress must always be laid on a home of refinement and culture as its indispensable complement. Should any doubt remain let us recall the investigations made by Miss Dinsmore of London, "in schools attended by children of laborers and small shop-keepers and schools attended by children of the middle classes, which showed that the children of the latter were far superior in their knowledge of words." It is absolutely necessary that the child come in daily contact with educated adults whose language is refined and whose vocabularies are choice and extensive. Nor must the child be isolated but have a number of suitable playmates who will be a constant incentive to talk. A great deal of unwisdom has been displayed in regard to the instruction of children and youth in all ages and among all nations. The Greeks and Romans employed slaves as tutors and guardians. Our southern fellow citizens have employed and still employ colored nurses who are frequently ignorant, superstitious, unrefined, and even vicious. For the training of their race horses, the building of their houses, the making of their furniture and clothing, the managing of business, industries, etc. the best talent is secured, but for the moulding, training and education of the precious, plastic minds of their own sons and daughters any old, worthless thing is good enough. Slang, incorrect pronunciation, violations of grammar, the corruption of character by the implanting of immoral thoughts and beliefs in hobgoblins and mysterious beings that forever haunt the soul, are thus lodged so firmly in the tender receptive mind that hardly any later training, however severe, is able to eradicate them. Many a middle-aged man of culture has not been able to free himself of the linguistic corruption of the nursery, and that in spite of the most rigid watchfulness and self-criticism. The reason is obvious. What once has become automatic by repetition, sinking into the subconscious level of the psycho-physical organism, is never lost. In an unguarded moment, when conscious inhibition is lacking, the latent idea, a sort of uncanny *revenant* from childhood's days, will suddenly effect an intercentral connection between the impressive and expressive paths, and the slangy word, the corrupt pronunciation, the grammatical error, or the musty profanity will glide over the lips.

The child is, as a rule, very inquisitive. This natural bent should be encouraged and satisfied. In this way its store of ideas will grow rapidly. Plenty of well selected picture-books and playthings, as for instance those that illustrate mechanical and scientific principles and devices, if only intelligent parents

or elders take the interest and trouble to explain them and direct their use, will greatly enrich the infantile vocabulary. The Germans have long recognized the importance of these means. Their picture-books illustrating the furniture of different kinds of houses, the various trades and industries, factories with their varied products, pictures of animals, flowers and plants, farm and city life, railroads and steam-boats, etc,—all these have been used by them to great advantage. If such things were wisely used as a source of amusement before school age and in the nursery, splendid results could be secured. Here, it seems to me, lies the promise of a better equipped humanity. If the linguistic and educational possibilities contained in these simple devices were once realized, our children would leave the play-ground training field of the home and enter the primary schools with a store of ideas and a vocabulary before which the present ones would dwindle into insignificance. With the present slipshod, haphazard and chary method of imparting a vocabulary there are too many details connected with the different phases of life that remain nameless in the youthful mind and therefore practically unknown. But when this scientific procedure is adopted in the home a better day will dawn for humanity, and a great scholar and educator like President G. Stanley Hall, so deeply interested in children and adolescents, will not have to lament "that fifteen-year-old country boys are often blocked incredibly in reading by ignorance of simple words."

At four or five years of age the process of language formation is about finished, and the serious task of completing the structure, whose foundation has just been laid, should begin. In about four or five years the most important and decisive stage in psychic unfoldment has been completed. For then that feeling for the vernacular has been developed which is the human soul's most precious possession. No later linguistic studies can supplant it. The language form, the set of vernacular symbols suffused and replete with childhood's emotions, thoughts and experiences constitute, determine, and color all later intellectual activity. How intimate, how full of meaning and emotion are the common everyday Anglo-Saxon words to the Englishman or American! Any other set of symbols acquired later seem pale and lifeless in comparison. They do not grip the heart with the warmth, nor utter the soul's deepest aspirations and secrets with the ease, fulness, and spontaneity of the native forms. The more varied and extensive this native linguistic explicitation of the plastic mind, the richer and more complete will be the mature life. The importance of these early motor and auditory forms, or

images, of the native tongue cannot be exaggerated. They constitute, as it were, the fertile root from which springs a rich or meager intellectual harvest.

It is at the age of five or six that a new element in language growth is added, *viz.*, the visual. Every educator with clear vision must deeply regret the great and general incompetence and lack of thoroughness permitted right at this starting point in our schools. The best trained, the fittest by nature, the most sympathetic men and women with aesthetic souls, instinct with the sense of artistic creation, literary taste and talent, are not engaged as teachers. The famous English school-master, Richard Mulcaster, about three hundred and fifty years ago, dared to suggest that elementary teachers should have the smallest number of pupils and the highest pay. "For the Elementary," he says, "because good scholars will not abase themselves to it, it is left to the meanest, and therefore to the worst." He desires that "the first grounding" should be handled "by the best" and that his reward should be greatest, "because both his pains and his judgment should be with the greatest." He continues, "It is the foundation well and soundly laid which makes all the upper building muster with countenance and continuance. If I were to strike the stroke as I am but to give counsel the first pains truly taken should in good truth be most liberally recompensed, and less allowed still upward as the pains diminish and the ease increaseth." He adds that, because this is not done, the imperfection of the elementary pupils "at this day doth marvellously trouble both masters and scholars, so that we can hardly do any good, nay, scantily tell how to place the too raw boys in a certain form with hope to go forward orderly, the groundwork of their entry being so rotten underneath."

What a strangely modern ring this complaint has! Still Mulcaster's wise suggestion is not the first of its kind in the history of education. Plato's *Republic* is the first known treatise upon education, and it is in this masterpiece that the great Athenian thinker-artist about 350 years B. C. said: "You know also that the beginning is the chiefest part of any work, especially in a young and tender thing; for that is the time at which the character is formed and most readily receives the desired impression." (Rep. Bk. II., Par. 377, Jowett's Transl.) Plato realized also the great importance of adapting the material taught to the child's mind, just as clearly as Mulcaster. Alas, what wisdom, what golden truths, hewn by the ancients from the solid rock of experience and deep reflection, still sleep in the ear of drowsy posterity! No wonder that the plastic soul of the child is not moulded, in the

home and the class room, into an image of divine grace and loveliness. The choicest, most suitable mental *pabulum* is not placed by loving hands before our hungry, omnivorous youth; nor is love of beauty, as a life-harmonizer, as Schiller conceived it, kindled in the child's heart. How can young inexperienced girls, for instance, with but a meager education, innocent of psychological training and insight, lacking even the mastery of the spirit, strength and beauty of their own mother-tongue, impart these things to the tender unfolding minds given in their charge? Instead of teachers truly cultured, whose warm hearts beat with high moral, social and artistic purpose, we employ, very largely, mere operatives and makeshifts in the humdrum factory of instruction. Psychological pedagogy is still a young science groping its way in the bewildering maze of theories and guesses. Experimentation and volumes upon volumes replete with experimental data are accumulating at a tremendous rate, but where is the superior scholarship, the diviner humanity accruing therefrom? Theory is too far ahead of practice. We have too many theorists and book-makers, and too few Pestalozzi's in the class-room. In education, as in all fields of human activity, truth has outrun its practical application. Let us get more teacher-artists to incarnate it in young souls. There is truth enough known to transform our earth into a veritable *Civitas Dei*, and to fashion the human child into a thing of beauty that would be "a joy forever."

Why is this ideal so slowly realized? Because man, engrossed in the world of sense, fails to lay the chief stress on things of infinite and eternal value. He lives, moves, and has his being in matter and motion, the fleeting aspects of existence. As yet he has scarcely surmised that the third aspect, form, is, by far, the most important. What, for instance, is moral truth compressed in the irrepressible word *ought*, if not in its essence form the structure of ideal personality? The chief element in art is form. But has not the search for it been rather misdirected ever since the birth of artistic genius *par excellence* in Greece 2,400 years ago? What is an Apollo Belvedere, a Venus de Milo, a Juno di Ludovisi, or an Olympian Zeus of Phidias compared to a beautiful human soul? So far man has preferred to apply his highest genius to things that perish. He desires to make his ideal live and breathe in the marble, or the canvas or in the divine harmonies of music. Here he would immortalize himself. In vain. These superb works of art, be they plastic or literary, never become a living formative influence in the lives of ninety per cent of our race. Beauty or artistic value must be appre-

hended and enjoyed by all if moral turpitude is not to sully it. This ideal cannot be attained until man realizes that the young, impressionable, plastic soul is the fittest and worthiest medium of the artist's creative activity. If the artist, capable of calling forth from the inanimate marble, or on the canvas, an ideal of beauty, is worthy of the highest honor and reward, should not the teacher-artist enjoy the same distinction and appreciation, he, the spirit touched to fine issues, who awakens and helps to complete unfoldment the divine image slumbering in the child and youth? This question will not receive a hearty affirmative answer until the true criterion of all values has been universally recognized and adopted. The great and peerless teacher of Galilee fixed this criterion more than nineteen hundred years ago when he said: "For what is a man profited if he shall gain the whole world and lose his own soul?" The human personality is here given a practically infinite value. Therefore, the teacher, whose function next to that of the parents is to train, mould, refine and perfect young souls, should be second to none in human society. Some time, in the distant future, this high prerogative and inestimable worth of the genuine teacher will be fully and freely acknowledged. Some day parents and teachers will be deeply versed in psychological pedagogy, and work hand in hand for the production of a nobler, more beautiful race. In that day they will be the *élite* and the greatest benefactors of humanity, not the merchants, politicians, statesmen, warriors and rulers.

#### VARIOUS WAYS OF ACQUIRING A VOCABULARY

Tests have been made which show that the value of a good book, read slowly and with a dictionary at the elbow, cannot be overestimated. Our present hurried, haphazard, and indiscriminate juvenile reading is of small value and questionable benefit. In our age of hurry and ever accelerated speed, fast reading is always encouraged and even urged upon the student. This is a grave error, for it is like overeating, the system being unable to assimilate it all. It would be wise to stick to the principle of the Jesuit educators *viz.*, thoroughness, *non multa sed multum*, observing the Latin adage, *FESTINA CENTE*, we shall in the long run overtake our nervously hurrying competitors. The rule of the Jesuit teacher, in the first form, to assign as a lesson only four lines of Latin text may seem ridiculous when compared with our quantitative standard, but the results they obtained speak for themselves. Not only was the exact meaning of every word in the lesson firmly lodged in the learner's mind but its spelling and syntactical relation in the sentence. Nor were synonyms, his-

torical and mythological allusions connected with the four lines neglected. As language is now studied the learner has often the vaguest notion of the meaning of words, and, not infrequently, none at all. Words merely remembered, without a clear-cut definition, are a useless mental equipment.

Another excellent way of acquiring a vocabulary is word-analysis, unfortunately hitherto greatly neglected. Combined with spelling and etymology this study will give the student a knowledge of roots, prefixes, infixes, suffixes, primitive, and derivative words that is absolutely necessary to a masterful command of the mother-tongue. An accurate knowledge, for instance, of Anglo-Saxon and Latin affixes will add thousands of words to his vocabulary, besides clarifying the meaning of many already known. Glimpses into the history of words will thus be obtained that reveal a new and fascinating world. In the primitive roots, hoary with age, for their origin is lost in prehistoric mist, the young student may begin to read the phyletic soul mirrored in them.

What a long race experience, what a dark and sad stretch of human error, naive faith in the inexplicable and super-human, and superstitious terror are suggested by the everyday word, *disaster*! Analyzed it is found to be composed of the Latin prefix, *dis*, Greek *σύς*, ill *asunder*, and the Latin noun, *astrum*, Greek *ἀστρον*, star. Thus this little word alone suggests a long chapter in the history of the human mind viz., astrology. Once the heavenly bodies were divine beings good and evil. Every man was born and lived under the influence of one of these celestials. This primitive superstition still survives despite scientific progress. Astrologers still ply their obscurantist business and have many dupes. The expressions "born under a lucky or unlucky star," or "you may thank your stars," still bear witness to this early stage in psychic evolution.

Again a study of the Indo-European root of *jn*, *gn*, or *kn* will reveal the astonishing vitality and fertility of human speech. It resembles in this respect life itself in its almost endless ramifications. This root long ago sent forth two main stems, one denoting physical, the other mental generation. Thus we have the Sanscrit *jan* to beget, produce, *jana* man, *janaka* father, *janani* mother, *janman* birth, existence, and *jñā* to know and *jñāna* knowledge, insight, etc. In Greek its growth is even more luxuriant. Only a few examples can be cited. Thus, denoting physical production, we may notice *γεγνομαι* I become, am born, etc; *γενέτης* begetter, father; the begotten or son, *γενετήρ* or *γνέτερα*; she who bears, mother, *γενεσίς*; creation, generation, birth, race, descent, *γένεσις*, birth,

race, generation, descent, *γένος*, race, stock, generation. Of words denoting mental generation derived from this primitive root, may be mentioned *γνωσκω* I know, perceive, mark, am aware of, see, understand, *γνώσις* inquiry, knowledge, deeper wisdom, and others too numerous to mention. In Latin we find it in the forms of *gigno*, to beget, bear, bring forth, produce, *genetrix*, she who has born, a mother, *genitor*, begetter, father, *genitalia*, gens, clan, etc. Of those relating to mental generation may be recalled *agnosco*, to know or recognize a person or thing, *cognosco*, to know, see perceive, understand, become acquainted with, *cognitio*, knowledge, acquaintance, etc.

In English the root appears in *know* in the sense of physical generation, e. g. "And Adam *knew* Eve his wife; and she conceived and bare Cain," etc. Gen. 4:17. The more common meaning of the words is, of course, that of mental generation or activity. Then there are the derivatives knowledge, knowable, etc. In vulgar Swedish there are words, derived from the same root, denoting the sexual act. A mere hint at, or brief explanation of, the psychological causes of the differentiation of word-roots into such divergent stems will prove interesting and profitable to the wide-awake student. Being informed that such differentiation of words, both as to form and content, is due to certain well-known laws of mind, viz., the laws of association, e. g. the law of similarity, dissimilarity, contradiction, etc. said student may, in this incidental way, conceive a life-long love for such an exceedingly illuminating and fruitful science as psychology. A richer, deeper meaning of words, and a profounder insight into the race-soul is unquestionably his reward.

When school-age is attained spelling should be judiciously made to contribute towards an enlarged vocabulary. In this respect, Dr. Doran's practice seems a good one. "It was my custom as teacher in the public schools," he says, "to require pupils of all ages to spell, and to know the meaning of the words they spelled. Why should we ever learn to spell a word whose meaning we do not know? We cannot make any use of the word until we grasp its meaning. It is vastly more important to know the meaning than to know the spelling, for we may correctly use a word orally which we cannot spell. In fact, most people speak a hundred words to one they write." Both written and oral tests in spelling, with the definition of the words, have proven exceedingly helpful.

But no language should be taught without severe and prolonged exercises in scientific phonetics. It is really a great pity that this subject has, so far, been almost neglected. It is

still a very young science—A study of each sound, constituting the word, and represented, though inadequately, by a certain letter of the alphabet, will give the student such an intimate and minute knowledge of the word that it will leave an indelible impression on his mind. He will then become conscious, for the first time, of the fact that the graphic or nomic symbols merely mirror his vernacular as it was spoken many centuries ago, while the phonetic represent quite closely the actual speech of today. The two sets of visual images, the graphic and the phonetic, will also fix the word more firmly than one, just as two properties of an object may better aid in recalling it, than one only. This study will, furthermore, develop self-observation and self-criticism, without which a correct pronunciation and clear articulation can never be acquired. The pleasing art of a clear, distinct articulation is extremely rare today, and as a result we have poor readers and speakers.

Moreover, the discovery that the sounds composing a word, and even those juxtaposed in different words in a sentence, as in French, influence and modify one another, will be to the learner an interesting revelation. One is so easily the dupe of orthography. Few people indeed are conscious of their own pronunciation. But phonetics will show how a sonant consonant may impart to a neighboring mute its sonant quality, and vice versa. The phonetic phenomena of assimilation, progressive, regressive and reciprocal, will flood the living word with a new light. This fact may, by way of diversion, be utilized by the instructor to impress a useful lesson in character-building. Phonetics thoroughly mastered will also deepen one's insight into the nature of voice. From the objective point of view of physics, anatomy, and physiology, voice will be seen to consist of "the various combinations of air-waves which affect the auditory mechanism of the listener," while under its purely subjective aspect one may detect in it a "spiritual issue," as Emil Sutro concludes after many years of indefatigable experimentation on himself. (cf. "Duality of Thought and Language," and "Duality of Voice," by that author.)

Supt. J. M. Greenwood shows by a simple test of himself, while a young teacher, what early attention to the meaning of words can accomplish. He says that once he marked all the words in Webster's Academic Dictionary whose meaning he did not know. He found only 68 out of about 10,000 contained in it, and, of course, immediately learned their meanings.

Pres. Charles W. Eliot tells, in an article on Benjamin Franklin, how this self-educated man enlarged his vocabulary. "To improve his vocabulary," writes Pres. Eliot, "he turned specimens of prose into verse, and later when he had forgotten the original turned the verse back into prose. This exercise enlarged his vocabulary and his acquaintance with synonyms and their different shades of meaning, and showed him how he could twist phrases and sentences about. His times for such exercises and for reading were at night after work, before work in the morning, and on Sundays." (Science, June 1, 1906.)

In our graded schools and colleges a severer discipline in composition should be required, and one of its most important features ought to be a ceaseless endeavor to use the right word in the right place. Precision, accuracy, and clearness of expression, absolutely essential to the best diction, can be attained in no other way. Such a habit, early established, will result in a large and choice vocabulary. But such an ideal cannot be attained under present conditions. As far as remuneration is concerned intellectual labor is at a heavy discount at present. To save money all schools require too large classes. Teachers are too few and many of inferior talent and preparation. Student readers are often hired for a pittance who cannot properly correct and criticize the exercises submitted. It is easy to imagine the critical work of a college student hired to read two or three hundred class papers at twenty-five cents an hour. If the Olympian gods ever pay any attention to this educational farce of the 20th century there must arise among them "an inextinguishable laughter." No wonder that for many years, all over our land, educators have lamented our poor college English.

A movement recently started at the University of California requiring all professors and instructors to report at the end of each semester on all cases of defective English, is a timely one. But it is no remedy. The only effective cure is more capable, conscientious teachers and smaller classes, admitting of more individual help and attention inside and outside the class-room. Far severer grammatical drill, and analytic study of English are imperatively required than is now the case. All teachers should do their part in creating a higher standard of college English. This, of course, would involve the elimination of foreign teachers who never mastered English, and natives with a poor record in their vernacular. No words whose meanings are not perfectly clear to the student should be passed over in any subject, without being accurately defined.

## THE CLASSICS AS AN AID IN ACQUIRING A VOCABULARY

During the last thirty years there has been a strong reaction against the classics. Purely cultural subjects have had to give way to practical ones. Our age appreciates most of all material values and our country lacks venerable traditions. All activities must have a direct economic bearing on life. Modern education must create greater material efficiency. Beauty and things of the spirit serving divine self-realization are therefore of secondary importance. Hence classic culture is largely eliminated from the curricula. The classicist laments this trend in education and regards it as an inversion of real values. Sometimes he is in a spirit of grim humour like Dean Swift. He thinks of his voyage to Laputa, and the University of Lagado with its professor extraordinarius of architecture who had conceived a brand-new method of erecting all sorts of buildings by starting up in the air with the roof and body of the building downwards. But a return to the classics may safely be predicted when our country is older and things of sense no longer meet our highest aspirations.

The value of the classics for the mastery of the English vocabulary is self-evident. About one-third is of Latin origin and a considerable per cent of our scientific terms is Greek. Everything else being equal, a native Greek and Latin scholar will therefore be the greater master of the English vocabulary.

As a proof of the value of Greek for one's vocabulary, Dr. Doran's test is quite convincing. "In making the test on Mrs. Crider's vocabulary," he says, "I found three different pages of the dictionary on which she did not know a *single word*. These pages were filled with scientific terms derived from the Greek, and she had not studied Greek. She had a fine training in Latin, and this put her to the front of all those tested, yet two or three years in Greek would have added thousands of words to her vocabulary. Even one or two years in Latin or Greek are valuable in this respect. One who has worked out carefully the conjugation of a dozen Latin or Greek verbs has learned new meanings to hundreds or even thousands of English words. Mr. Meserve, who made the best record in the James Millikin University, has had five years of Latin, five of French, two of Greek, two of German and one of Spanish."

A year or two devoted to Anglo-Saxon, this somewhat unwieldy source of English, would yield an ample reward. The speech of the Angles and Saxons, though lacking in beauty of

form, grace, flexibility, and polish of expression, possesses an inherent strength and a rugged precision that modern English would do well in appropriating. A fair familiarity with its words, prefixes and suffixes would enlarge the vocabulary and make many every-day terms glow with a new light. When we know that the A. S. prefix *be*, for instance, means *by*, *around*, or has a privative sense, words like bedraggle, bedaub, bedew, bedaff, bedevil, bedight, besmear, besmearch, behead, etc. acquire a more objective and concrete significance. Even such an every-day word as the adversative conjunction *but*, from A. S. *be + utan*, *by + outside*, becomes more forcible. Again, when it is learned that the prefix *for* means *loss* or *destruction* words like forego, forjudge, forsake, forfeit, forget, forgive, forbear, etc., become quite luminous.

Take again the preposition *with*, A. S. *wip* c. dat and acc. which means both *with* and *against*, or *by* and *along*, e. g. "*sumu hie féollon wip weg*," and, "*hie fuhton wip Brettas*." In Gothic its form *wipra*, prep. c. acc. against, opposite, in Old Norse it is used as a prefix, e. g. *vidr-gefandi*, one who repays a gift by giving another in return, and *vidrnám*, opposition; in German *wider*, prep. or prefix, e. g. *wider mich* and *widerstehen*, *widerstand*, etc. in Greek *érepos*, the other. Thus the meaning of such verbs as withdraw, withgo, withhold, withsay, withset, withstand, etc. become clear and intelligible. It also illustrates that strange linguistic phenomenon of opposites found in mutually unintelligible languages and entirely independent stocks. In Japanese, for instance, the word *jippi* means both good and evil. Speaking of American languages Prof. Daniel Brinton says: "In Tinné, a great many words for opposite ideas are the same or nearly the same derived from the same significant elements. Thus, *son*, good, *sona*, bad; *tezo*, sweet, *tezon*, bitter; *ya*, immense, *ya*, very small." Howse finds similar examples in Cree. The radical *eth* in that language meant originally both being and non-being. The Latin verb *sacrare* means both to declare sacred and accursed. Its cognate adjective *sacer* has the same double meaning, and this is also true of its modern French derivative *sacrer*. The English verb *let*, permit and hinder is an interesting example. "By heaven, I'll make a ghost of him that *lets me*," (hinders me), (*Hamlet*).

Some scholars are inclined to see in this curious phenomenon an unconscious logic of the human mind, Hegelianism before Hegel. So Professors Brinton and Howison. The word *taboo*

may suggest a simpler solution as it reflects a psychic plane prior to a conscious metaphysical and ethical dualism of being. In man's infancy good and evil or opposites sprang from the same source. Jehovah declares through Isaiah: "I form the light, and create darkness: I make peace and create evil: I the Lord do all these things." (Isa. 47:7.)

The study of vocabularies, a subject usually as dry as dust, may thus become deeply interesting as it is made to yield a rich harvest in the fertile fields of psychology and race culture.

## A REPORT ON A COURSE OF STUDY FOR "OPPORTUNITY CLASSES."

By LINUS W. KLINE

The course of study submitted below, and now being used in the city public schools of Duluth, is a Duluth product planned and tested by Miss Maud Keator in conjunction with the teachers having immediate charge of opportunity classes.

City Superintendent of Schools, Dr. K. J. Hoke, had two classes formed during the school year 1916-17 in conformity to the Minnesota school law for backward pupils. It soon developed that adequate service for such work is confronted, particularly, by two needs: first, a lack of a sufficient number of suitably trained teachers, and second, a tested course of study adapted to the needs of such pupils. To meet the first need, the State has made a beginning by providing a "Teachers' Training Course for Opportunity Classes" to be given at the State School for the Feeble-Minded and at the State Normal Schools. The general requirements of this course for teachers have been determined under the supervision of Dr. Fred Kuhlmann, Director of Research at the School for Feeble-Minded, Faribault, Minn. No concerted plan has yet been devised to organize and test a course of study for "opportunity pupils," and it may not be desirable to do so until more tentative and pioneer work has been completed. Meanwhile reports on work that is being tried and is meeting the requirements should hasten the time when more comprehensive and permanent plans are to be realized.

The report as given here was made at my suggestion by Misses Anderson, Meehan and Thibert, teachers of "opportunity classes." Their names are appended to the report. All three have had special training for such work and from one to three years of experience.

Certain features of "opportunity classes" are being unmistakably recognized; so much so that they form a *sui generis* group in public education. I shall refer to only a few of the features by way of calling attention to problems and difficulties encountered in this new field of teaching.

1. Children under institutional care have but one source of control; they owe allegiance to but one head. The "opportunity child," like all public school children, looks to the school

and the home as sources of guidance and control. And all too often the home of the child is an indirect if not a direct hindrance to its control. Teachers report that the child does well enough while in school but that troubles begin as soon as it starts for home. An attempt to build habits of control under such conditions approaches painfully a sisyphus task.

2. The matter of morale with these little folk is a constant problem for the teacher; not unlike that of the soldier, it may be buoyed up or cast very low by a trifling matter. They are more or less dimly aware of their weaknesses and inadequacies; they have been in a few of the regular grades, perhaps, and now witness their friends and kinsmen go on, begin new work, new subjects, bring home new books and do new things in school. The teachers of these classes must be constantly on the alert to overcome such and many other influences calculated to depress the child.

3. Unlike the institutional child there comes a time when the "opportunity child" must take his chances in the wage earning world; he must be a wage earner as far as his capacity will permit. Teachers report that the course of study as well as the conditions for putting it into operation to meet this demand are still unsolved. It would seem that such a problem requires the coöperation of both the public schools and the industrial interests of a community to effect a proper solution.

4. The matter of sanitation and hygiene calls for greater care and vigilance than in the regular classes. After all, a course of study for these special classes on paper does not deviate to any great extent from those current in our best city schools. The greatest difference will, doubtless, always consist in the methods and spirit in which it is used. The report, here, follows:

In an effort to educate "all the children of all the people" a new class has been created in the public schools of today. Hand in hand with the establishment of classes for the blind, the deaf, the crippled, the supernormal, and the foreigner, has come the class for the mentally deficient, the backward or born-short child. Such classes are known as "opportunity classes." Their aim is to make the most of the capacities and capabilities of each child, at the same time endeavoring to make the misfit child happy in his school activities, which is practically an impossibility in the regular class room.

In this State the legislature has made provisions for the education of such handicapped children. The State bears part of the expense of the opportunity room or rooms and makes certain requirements in regard to teachers, equipment, and subjects taught. Duluth has two centers, the Ely and the

Jackson, containing four and three rooms respectively, besides five single rooms in the Adams, Bryant, Emerson, Lester Park and Monroe Schools.

Children are placed in opportunity classes only after having received a mental test by one especially trained in this line, and a physical examination by a school doctor. The state law provides that pupils having an intelligence quotient between fifty (50) and eighty-five (85) may become candidates for these classes. Those whose I. Q. is less than fifty (50) are institution cases and are not to be placed with the other pupils but rather in the regular class room until provision is made for them. Only fifteen (15) pupils are allowed in each special class.

In the centers the pupils are classified according to grades as far as possible. In the Jackson center, we have three divisions, i. e., First class—with a mental age from four to eight, doing primary work. Second class—with a mental age from seven to nine, doing second and third grade work. Third class—with a mental age from eight to eleven, doing fourth and fifth grade work. Aside from placing the child according to his mental age, his placement depends somewhat upon his physical condition, his training, and his general experience.

Although we are submitting a course of study, those of us who have had classes for several years feel that it is seldom possible to follow the same course for successive years, since the abilities and interests of the children vary decidedly. However, suggestions given in the following will probably aid those who are contemplating entering this work.

#### READING

**AIM :** To teach the child to get the thought from the printed page, to use a book intelligently by himself and to be able to relate, interpret or correlate what he reads in relation with his own thoughts and ideas and benefit thereby.

**FIRST DIVISION :**

The work in this class is practically individual. The abilities of each child vary. Teach the alphabet, sounds, phonograms and words. Combine same into sentences and finally read from primers available in building. Correlate all seat and board work with reading lesson. Build words on desks, build sentences. Cut out pictures from magazines and catalogues and paste in books and print or paste words underneath same. Underline familiar words in old magazines. Use many devices to keep interest of class.

**SECOND DIVISION :**

Continue phonic drill, study of difficult words, spell new

words, write on board, find in books, make alphabet word lists and little dictionaries. Skip around in story reading to class, pupils find the place. Send class to board, read to them, have them write words given on board, looking at books for the spelling. Ask questions, pupils find answers in book and copy on board. Have written reading language lessons at seats. Dramatize and reproduce stories read. Paraphrase poems. Pupils cite similar instances or circumstances in own lives. Aim to get the thought and give same. Time pupils reading, test for speed and accuracy. Use simple readers and possibly only one or two during whole year. Do not have a study period.

**BOOKS SUGGESTED :**

- Brooks II Reader.
- Language Readers II and III.
- Fifty Famous Stories :
- That's Why Stories.
- Short Stories for Little Folks.
- Holland Stories.
- Animal Life.

**THIRD DIVISION :**

Aim to read understandingly the printed page of reader, the daily newspaper, the arithmetic problem, the geography lesson and books taken from library or supplementary books found on book shelf in school rooms.

**BOOKS SUGGESTED :**

- Carpenters Geographical Readers.
- Jones Readers.
- Golden Rule Series.
- How We Are Fed.
- How We Are Clothed.
- How We Are Sheltered.
- Stories of Thrift.
- Stories of Great Artists.

**PHYSICAL TRAINING**

The physical development of the child is one of particular importance. Our aims are many and varied, such as—alertness, concentration, kindness, respect for others' feelings and rights, exactness, fairness, honesty, gracefulness, lightness, and individual control of movements gained by frequent repetition. The academic work may be varied by inserting games, etc., between classes or when pupils show restlessness or inattention. The monthly outlines of the supervisor will be found very beneficial, and only such games and exercises need be chosen as are suitable to the classes in hand.

In the two upper divisions, the weather permitting, much of the marching, calisthenics, rhythmic exercises, and a few of the games and folk dances may be given successfully on the playground thereby developing and training the child's power of concentration.

**FIRST DIVISION :**

Such exercises as marching, marking time, clapping hands, skipping, galloping, running, jumping and hopping will serve to rest the child and also develop his muscles. Simple rhythmic stepping exercises with arm movements will naturally follow, resulting in motor coordination and control. Vary the above with such simple games and folk dances as I See You, I Spy, Follow the Leader, Jack-in-the-Box, Looby Loo, The Mulberry Bush, Oh a Hunting We Will Go, Draw a Bucket of Water, The Danish Greeting and The Shoemaker.

**SECOND DIVISION :**

A continuation of the work given in the first class adding more rhythmic stepping, exercises, i. e. (1) teach step left forward, raising arms forward and (2) marching forward, same with right foot and repeat. Then a three count exercise with arm movement. Also a combination of marching, chain stepping and heel and toe and one, two, three count exercises.

Such games and folk dances as The Shoemaker, Klappdans, Norwegian Mountain March, Swiss May Dance, Yankee Doodle, Run for Your Supper, Have You Seen My Sheep, and others suggested by regular outlines.

Simple calisthenics and breathing exercises may be given. Aim for exactness and team work. Choose a drill or set of exercises and work on each step until eight or more different exercises may be combined and given without direction from the teacher. Allow individual to give exercises and act as directors. This results in more attention, responsiveness and freedom on child's part.

**THIRD DIVISION :**

Review work of other divisions and add to each phase of the work a few more difficult steps, games, combinations and drills.

Calisthenics: Follow out four and eight count directions and combine with leg exercises.

Marching: Add to former outline a few military steps, the standing jump and more difficult breathing exercises. Front rank count by fours, eights, mark time and circle right and left. Give special attention to correct sitting and standing posture.

Lead up to simple wand and dumb bell drills and more advanced folk dances, as the Tantoli, the Bleking, Rye Step and Seven Jumps.

Books by Marie Hofer, Popular Folk Games, and Dances; Bancroft, Book of Games; Crampton, The Folk Dance Book; Crawford, Folk Dances and Games.

#### DRAWING AND INDUSTRIAL ARTS

Through the subject of Industrial Arts the evolution of the race may be developed. By project lessons pupils may become acquainted with the principles of industry as these developed with man's desire to adjust himself and the material at hand to his social needs.

The transformation of a raw material into a commercial product through play, curiosity, imitation, imagination and required duties will help the child to understand the activities and processes of manufacture better than the mere reading about or hearing of facts connected with the same.

The following suggestions may be an aid when planning work for special classes. Little grading of work is given owing to the fact that age, physical development, and natural abilities of the child combined with training plus experience necessitate the giving of individual problems.

Endeavor to use the materials at hand. Give as much variety as possible for the interest of the child is a vital point. Constantly repeat until habits are formed. Follow regular outline as much as possible.

No. I. II, III, below refer to divisions mentioned.

#### WEAVING:

I Rugs, mats, pillows for doll beds, doll hammocks, paper weaving of baskets, boxes, etc.

II and III Hammocks, rugs, baskets, chair caning, reed lamps, standards. In basketry gather materials in field trips. Make study of mediums used, raffia, reed, chair cane, hong kong twist.

#### MANUAL TRAINING:

I Use of tools, care of material. Make tops from spools, doll house furniture from cigar boxes, stick prints, sawed paste board puzzles, coping saw toys.

II Paste board puzzles, wooden puzzles, jointed toys, stick prints, toys, book racks, trouser and skirt hangers.

III Book racks, plant stands, simple waste baskets, foot stools, stick prints, sleds, wagons, toys, repairing sleds and

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chairs, book cases, bunny wagons, etc. Staining, painting, waxing, and varnishing of same. Care of brushes and paints. Sharpening of tools.

Study of Lumber Industry, and the manufacture of Nails.

### COBLING:

III Shoe Repairing, blacking and polishing. Use of tools. Care of leather.

Study: Leather Industry.

### NEEDLE WORK:

I Spool knitting, sewing cards, sew on buttons, simple stitches, knitting of blocks. Make bean, marble and button bags. Sew raffia baskets. Crochet chains.

II Various stitches on samplers. Sew on buttons, button holes, carpet rags, holders, aprons, skirts. Crochet simple laces, face cloths, holder, knitting. Begin sewing on machine with paper.

III Continue II's work. Sew towels, bags, mitts, carpet rags, blocks for quilts, aprons, dresses. More advanced knitting and crocheting. Machine Sewing. Feather stitching.

Study: Cotton Plant, Silk Worms, Wool Industry, Story of Flax.

### CLAY MODELING:

I Model blocks, animals, dishes, correlate with other subjects.

II Paper weights, tiles, animals, bowls and clay moulds.

III Designs on bowls, vases, etc. Animals. Make one and two piece moulds.

Study: Indian Pottery. Modern Methods. Utensils of Race, Manufacture of bricks, tile, concrete, experiment with common and prepared clay.

### BOOK MAKING:

I Simple records kept. Simple sewed booklets.

II and III Advanced booklets. Make book if possible. Print alphabets, mottoes, verses. Illustration as a means of expression.

Study: How Race Puts Itself on Record.

Make paper.

Make Blue Prints.

Visit Newspaper Plant.

**CONSTRUCTION :**

I Paper boxes, furniture, houses, churches, toys.  
II Use of ruler. Follow dictated directions. Make envelopes, boxes, original model.

III Boxes, bags, desk sets, desks, envelopes.

Design same.

Do paper tearing and cutting, designing, painting, crayon illustration and picture study whenever same can be correlated with the above.

**COOKING :**

Care of room and supplies.

Use of equipment.

Study of foods and their values.

Preparation of simple meal.

Manners at Table.

I. Make boiled desserts, baked apples, baking powder biscuits, candy and soups.

II Same as I. Add cookies and cake making. Cooking of vegetables.

III I and II and jelly making, pie crust, fondant and possibly ice or ice-cream. Short cake.

Repeat lessons until pupils can make accurate measurements and can make the recipe without help. Probably only eight or ten different recipes can be made in year in each class.

For Example, Baking Powder Biscuits;

1/3 c. flour.

2/3 t. B. Powder.

1/6 t. salt.

1 t. butter.

2½ T. milk.

Method: Follow directions given.

1. Mould with spoon.
2. Mould with cutter.
3. Drop into gem pans.
4. Add raisins.
5. Add raisins, make hot cross buns.
6. Omit raisins, add 1 t. sugar.
7. Same as 6. Make strawberry short cake.

Same may be done with almost all recipes given to the class, the constant repetition makes an impression, nothing else does. The variation keeps the interest.

Washing and Ironing may be taught the older pupils. They are very fond of it.

**STUDY :**

Duluth Universal Flour Mills, Bridgeman Russell Plant, Zinsmaster Smith Bread, Yale Laundry. Visit each.

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### BOOKS SUGGESTED:

School Arts Magazine.  
Industrial Arts Magazine.  
Library of Work and Play.  
Primary Handwork; Dobbs.  
Raffia and Reed; Knapp.  
In the Child's World; Poulsson.  
Suggestions for Handwork in School and Home; Hoxie.  
Fine and Industrial Art in Elementary Education; Sargent.  
Talks on Drawing; Colby.  
How Children Learn to Draw; Sargent.  
When the World was Young; Brown.  
Correlated Lessons in Language and Occupation Work; Dyer.  
Primary Manual Work; Ledyard & Breckenfield.  
Practical Raffia and Artistic Basketry; Tinsley.  
Beautiful Pictures to Paint and Draw; Platt & Peck Co.  
Manual Training for Common Schools; Allen & Cotton.  
Coping saw Work; Johnson.  
Cigar Box Furniture; Carr & Brady.  
The Little Girl's Sewing Book; Klickmann.  
Handicraft for Girls; McClauflin.  
Basic Principles of Domestic Science; Lilla Froch.  
Our Country's call to Service; Studebaker.  
Official Recipe Book, State of Illinois.  
Food Saving and Sharing, U. S. Food Administration.

### MUSIC

Song singing should be encouraged and given a daily place on the program.

Rote singing with kindergarten, patriotic, old home songs, folk songs of various nations, songs suitable to different seasons and many approved popular airs, should be chosen.

A short music period, with suitable songs should be given to the younger children and a longer period should be given to the older ones, as a General Assembly time.

### THE AIM OF THE WORK IS:

1. To develop a love for good music.
2. To develop a sense of rhythm.
3. To secure pleasing tones both in singing and talking.

### METHOD:

Sense training, much listening and rote singing of songs within the pupils' ken, are some of the means employed to secure a range of sound concepts.

(a) Rhythm—

A development of the feeling for and ability to express rhythm in bodily movements is greatly helped by stepping exercises, folk dances, written expression on the blackboard to illustrate time, etc. Illustrate with "Tulip Song, Owl Song," from Gaynor Book.

(b) Ear Training—

Good attention to this results in an appreciation of and discrimination between musical sounds. Here the phonograph can play an important part. The pupils may be trained to listen for familiar melodies, different musical instruments, distinctive kinds of voices, etc. Also short phrases of songs or compositions may be sung, or played for the pupils for recognition.

(c) Voice Training—

This is greatly helped by the proper use of the voice and ability to sing many songs. The children enjoy singing alone or in groups and with much judicious praise are encouraged to do this often.

(d) Harmony—

Some training can be given in this by singing rounds, having pupils play simple accompaniments for the songs or establishing a little orchestra. The children should be encouraged to play on different instruments alone or in groups if they have any talent.

**MUSIC APPRECIATION :**

By singing good songs and hearing good vocal and instrumental compositions a taste for the best music will be cultivated.

By listening to good phonograph records, suggestions are gained for the proper interpretation of songs.

A phonograph with our best records of operas, singers, etc., is a powerful teacher and should be used often during the music periods.

Such suggestions as—

1. The story of the selection.
2. A few brief descriptions of the singer.
3. An explanation of the musical instruments.
4. Attention to the time.
5. Class listen sometimes with closed eyes.

All this will keep the attention and make the lesson more valuable.

Rhythmic movements with music are powerful stimuli to the mental activity of the exceptional child. Their use should be constantly increased.

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### BOOKS SUGGESTED:

1. Use the Supervisors outlines as much as possible.
2. Gaynor Books.
3. Modern Books.
4. Progressive Books.
5. 101 Best Songs.
6. 55 Songs.

### LANGUAGE

#### PURPOSE:

To convey thought and feeling.

To assist the child in learning to express himself more accurately and completely.

For the pure pleasure of self expression.

#### ORAL WORK:

Much oral work should be done in all the classes and conversation is one of the most essential factors.

In the beginner's class sentence building in dialogue form is very helpful, as "Who came to school early? It was I."

Much material for oral work can be furnished by—

1. Descriptive guessing games, as "What man am I thinking of?"
2. Games drilling on uses of pronouns, as "John and I are ready."
3. Picture study.
4. Stories and rhymes.
5. Nature study.
6. Descriptions of familiar things.
7. Dramatization.
8. Word games.

For the next division the same helpful suggestions may be supplemented by:

1. The study of good poems and memory gems.
2. Training in courteous forms of speech:  
"I thank you, if you please, excuse me."
3. Word study: Homonyms, synonyms, rhyming.
4. Excursion, and talk on walks to school and parks.
5. Exercises giving the correct usages for are, was, were, see, saw, she, her, we, us, I, me, he, him.
6. Drills with irregular verbs, as break, broke, broken, lie, lay, lain.

With the oldest pupils much of the foregoing is very helpful also. Then Current Events forms an interesting basis for short talks on happenings in the world.

**WRITTEN WORK :**

For the lower classes, these suggestions may be followed with good results:

1. Dictation sentences using words for daily lessons.
2. Write names and addresses, names of places, days of week, months, holidays, dates.
3. Copy short poems and paragraphs. The children have a difficult task in copying anything correctly so they may be given simple imaginary stories to copy from the blackboard after the class has formulated the thought together.

Also short descriptions from work in the class, and simple riddles.

The upper division can do:

1. Simple letter writing, both friendly and business.
2. Observe simple forms for written work, margin, title and paragraph.
3. Learn principal uses for question mark, capital, letters, periods, commas, question marks, abbreviations, contractions, etc.

**BOOKS SUGGESTED :**

Language Book, Aldine.

Lessons in Language, J. N. Patrick.

Speaking and Writing, Maswell.

Language Games, Myra King.

Story Land, Clara Murray.

Aesop's Fables, Grimm's Fairy Tales.

How to tell stories to children, Sarah C. Bryant.

Primary Language Lessons, Emma Sarl.

Favorite Folk Tales Retold, Julia Cowles.

**FOR PICTURE STUDY :**

How to Enjoy Pictures, W. S. Emery.

How to Judge a Picture, J. C. Van Dyke.

Child's Guide to Pictures, C. H. Coffin.

Pictures Every Child Should Know, D. Bacon.

Famous Pictures, Barstow.

Addresses for Penny Prints of Famous Pictures :

1. University Prints, Newton, Mass.

2. Elson Print Co., Belmont, Mass.

3. Fenny Print Co., Malden, Mass.

**AIM :** Legibility.

**PENMANSHIP**

*Helpful suggestions:*

With the youngest pupils the following method of procedure is very helpful.

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1. Trace imaginary letters in the air.
2. All beginning work should be on blackboard with large and varied movements. Rhythmic movements can be used.
3. Similar exercises on paper with large pencil.
4. Use tracing.
5. Forming of simple letters—a-o-c-d-g—etc.
6. Combination of easier letters forming words in lesson. Copy.
7. As the Zaner method of Writing is used in the grades, those outlines should be used as much as possible to carry on the penmanship work, with all the pupils.
8. Encourage healthful position and ambition to do standard work.

### NATURE STUDY

**AIM :** To interest the children in their surroundings.

To make them observant and willing to help, whenever possible, in the development of seeds; treatment of animals; birds, insects and plants. Encourage the children in talks and walks to call by name; trees, shrubs, birds, flowers, weeds, insects, etc., which they see by the way.

Get stories and poems to correlate with nature study. This work can be divided in an interesting way into studies according to the seasons.

#### *Autumn—*

Trees; their names, uses, seeds.  
Flowers, wild and garden; their uses and cultivation.  
Vegetables, names uses, cultivation, parts used.  
Make collection of seeds, leaves and cocoons.  
Insects; useful, injurious; study one in particular.  
Seeds; study of one kind.  
How plants, animals and birds prepare for winter.

#### *Winter—*

Study trees in winter.  
Make bird houses.  
Forms of water; snow, draw crystals.  
Ice, frozen water; use of ice, steam vapor.  
Make a study of animals useful to man with reference to our clothing and food.

#### *Spring—*

Attention to swelling buds.  
Study the winds; kinds, effects, etc.  
Returning birds; what they do for us.  
Pussy willows.  
Fly; why it is our enemy.  
Spring rains.

### Early flowers.

## Preparation of home garden, care of it. Study tad-pole, cocoons, garter snake.

### **BOOKS SUGGESTED:**

Seed Babies, by M. W. Morley.  
Seaside and Wayside Series.  
Among the Meadow People, Pearson.  
Among the Forest People, Pearson.  
Among the Pond People, Pearson.  
Wild Flowers Every Child Should Know, Stack.  
The Water People, C. L. Sleight.  
Mrs. Wilson's "Nature Study."  
Tree-top and Meadow, L. B. McMurray & A. S. Cook.  
Our Common Insects, Baker.  
Little Brothers of the Air, Olive Miller.  
The Bird Lover in the West. Olive Miller.  
Stories of Trees, Mrs. Dyson.  
All the Year Round Readers.

## I DIVISION:

## **GEOGRAPHY**

## Simple Home Geography.

Lessons on land and water forms, using sand tables and taking field lessons. Classes may be taken to different parts of the city for lessons in this work. Correlate Geography and language.

See Minnesota Course of Study, page 128.

## II DIVISION:

Select topics from Course of Study on 3rd grade work. The study selected will depend upon children's experience. "The Indian Child" makes an interesting study. Basketry may be studied at the same time. Children begin to do some outside reading for themselves. Teach them how to look for things in a text.

The industrial growth of Duluth may be studied. Children may be taken to factories. Much use can be made of the lantern slides. The views are to be taken up in class work and recitations prepared to be given while showing the slides. Pictures on the dairy industry may be studied before and after visiting the Bridgeman Russell Plant.

Field lessons are always full of interest. Observation Park, Park Point, Chester Park and many other places give material for many observation lessons to be used as geography and language lessons.

The geography given to those pupils can be given best in story form. Stories should be illustrated as they are told or

read, and the places referred to should be located on maps. They may find maps in some simple text, and they enjoy locating places. Contests may be arranged in this work.

The Minnesota Course of Study, pages 128 and 130 gives some problem work that may be attempted.

III DIVISION:

Geography is combined with history, Current Events and Americanization work.

Suggestions given in the Course of Study for 4th and 5th Grades are used and as much correlation as is possible with the Industrial work is arranged.

A few pupils take some interest in current affairs, and all are interested in incidents of war, the Peace Conference and industrial changes brought about by the war. Types of aeroplanes, boats and submarines appeal to the boys.

Current Events, National School Service, Americanization Program, magazines and daily papers are all useful. Pupils may clip current events and paste them on a bulletin board and classify as home, county, state, or foreign news.

Place geography is studied as a background of human action. Pupils take pleasure in locating places, industrial sections, etc.

See Minnesota Course of Study, page 282 on racing.

The use of the stereoscopic views followed by the lantern slides are continued with these classes. A boy may be taught to operate the lantern. This makes a pleasing exercise for Friday afternoons. The teacher may select slides that give material connected with industrial work or with any country studied, or a historical picture.

Field lessons should be continued. A visit to a brush factory, match factory, rug factory, ore docks, shipyards, etc., will afford material for many lessons.

Children are interested in the early history of Duluth and in the people who helped to make this history. Biographies selected from American and World history are studied.

Simple problems in geography may be given. The pupils enjoy attempting to solve the problems even if they cannot do much reasoning.

The story of the Crusades is interesting in connection with the Health Crusade.

The great problem for the teacher is not to find material but to find time in which to use what is available. Duluth is rich in geographical material.

Books on historical and geographical subjects may be borrowed from the Public Library. Poems based on historical events may be learned in connection with the reading. The

Concord Hymn, Paul Revere's Ride, Marching Through Georgia, etc.

Patriotic selections and quotations help to develop a patriotic spirit.

A list of helpful available material is given with the Reading Outline for these classes, the Course of Study in Geography, Classification of Text Books, and the Course of Study in History and Civics.

#### PHYSIOLOGY AND HYGIENE

The following outline may be used with the III division and parts of it adapted for the I and II divisions:

##### Principal parts of the body—

Head,

Trunk,

Upper limbs,

Lower limbs.

##### Covering—The skin.

Use:

Care—Keep clean.

Bathing—When.

How often.

How.

##### The head—

Position and parts.

Care of hair, ears, eyes, nose, teeth, (elaborate).

##### Trunk—

Use—general, to hold together all parts of body divisions.

##### Upper limbs—

Hands.

Uses of hands—Work (elaborate).

Carrying food to the mouth.

Protection.

Care of hands (elaborate).

##### Lower extremities—

Position.

Uses—Running, walking, jumping.

Care (elaborate).

Posture of body in sitting and standing.

##### Special attention to—

1. Exercise, outdoor and indoor.
2. Ventilation, day and night.
3. Values of certain foods, milk, vegetables, etc.
4. Clothing, clean, suitable.
5. Respiration exercises.
6. Effects of tobacco and alcohol habits.
7. "Safety First" habits.

## ARITHMETIC

The course of study for the regular grades is so rich, complete and full of suggestions in all subjects that there is very little if anything to be added by the special class teacher. A teacher who is alive to the situation can select and eliminate to meet the needs of her particular class.

By following the essential points in the course of study in arithmetic, the pupil feels that he is getting the work of the regular grade, and he is able to compare the character of his work with that of his friend who is doing grade work. The resourceful experienced teacher will find plenty of material through selection from the regular course of study, and will always have some new way of presenting this material that will make her pupils happy and always keep a pleasing atmosphere in her classes.

## I DIVISION:

Follow course of study as far as possible. The work must be varied and interesting as in a class of normal children. However, the methods of stimulating the child's interest must be made more attractive than to the ordinary child. The sub-normal child lacks the power of voluntary attention. Drill on counting and combinations must be given much attention using concrete illustration until simple combinations are mastered. Blocks, balls, pegs, toys, beanbags, or any available material may be used.

## II DIVISION:

Drill on fundamental operations using various devices, Maxson's Self-Keyed Fundamental Number Work, published by Self-Keyed Number Work Company, Yonkers, New York, is excellent for drill and the work may be quickly checked. Any device attractive to normal children may be used with these children. The contest work is valuable. Practice tests by Courtis and Studebaker Economy Practice Exercises are valuable aids in keeping up interest and developing speed and accuracy.

Problems involving the making of change appeal to the children, advancement is made according to the child's ability. Each teacher at the present time uses her own judgment regarding the things she can best afford to eliminate from the course of study. A little concrete work can be done and should be introduced as early as possible. After the table of 3's is learned pupils may analyze simple problems in multiplication. If one book is worth 10¢, 3 books are worth 3 times 10¢ or 30¢. Problems will vary with different classes. Good

sentences should be a part of arithmetic work, thus correlating language and arithmetic.

### III DIVISION :

The pupils of this class usually come from the intermediate grades and have had some years of school experience. The plan must be varied according to the advancement of the pupil, simplifying it for one and amplifying it for another.

Continue the drill for accuracy and speed in the fundamental operations. The same practice material may be used as is used in the Second Division. A simple text may be put in the children's hands. Simple concrete problems should be given according to pupil's ability. The pupils have very little reasoning ability.

Fractions, denominate numbers, simple interest can be given; banking, cost of cooking material, shoes, clothing and other expense accounts make interesting problems.

### SPELLING

In a general way an attempt is made to follow the Duluth Course of Study, but as very few of the children will ever attend a regular grade again, their individual needs must be met by adapting the course of study to them rather than by following the usual plan of fitting the pupil to the grade.

A course of study can merely suggest. Wide latitude must be allowed the teacher in adjusting the work to meet the unusual conditions and exceptional types.

Spelling is one of the fundamental elementary school tools and should be taught with as much economy of time and energy as possible and should lead to applied work.

Sub-normal children of the border line class have fair ability to do memory work and can be trained to put forth considerable effort on study by memorizing. Many devices for study that appeal to the children in various ways through eye, ear, voice and muscular sense should be used.

Words should be taken from their daily experiences as well as from their lessons both in academic and in industrial work. The older children find it interesting to make their own spelling books on the dictionary plan, leaving two or three pages for each letter and supplying pages as their vocabularies grow. They add words taken from current affairs, e.g., "armistice" and "conference" have just been added to their lists.

Much time should be given to the discussion of the words with the pupils to help them over the hard spots in spelling. They enjoy coloring the letter that troubles them, *a* in separate, *g* in oblige, etc.

Pupils should learn to spell words familiar to them rather than words not likely to be used by them. Franklin Bobbitt says, "The intensive study of no word can be justifiable until after that word has become a portion of one's active vocabulary, at least, the reading vocabulary."

The habit of careful reading of every written word needs to be cultivated. Many times a word is correctly written near the beginning of a paragraph and later spelled incorrectly in the same paragraph. They can memorize the words to spell orally or in written lists, and then often spell them incorrectly shortly afterwards in written composition, this application is the real test of spelling. Much repetition is necessary.

Many pupils cannot copy accurately, copying paragraphs from a text helps to overcome this trouble, it may take many attempts before the work is done well.

Dictation exercises are good drills.

As a rule a text in spelling is not necessary for sub-normal children. However, anything that makes for variety is conducive to the children's happiness. One class was delighted when given the Alexander speller and took pleasure in finding the familiar words in lists assigned to different grades. They are anxious to learn their own grade abilities in different subjects.

The simpler rules of spelling may be taught to the older pupils. Any exercise that has a contest element in it is valuable for stimulating interest. The teacher of special classes must be ever on the alert for methods to make her work attractive and interesting.

Spelling should be taught with a view to its use in learning or doing something else, not merely as an end in itself. Every spelling lesson should be a language lesson.

#### MORAL TRAINING

Deficient children must learn by frequent repetition and habit, the lessons which normal children acquire through reasoning and comprehension of consequences.

Therefore, character building must be a source of constant vigilance with the special teacher.

Respect for the rights of others, thrift, pleasing personal habits, helpfulness, cheerfulness, obedience, power of initiative, defects of posture, gesture, speech, etc., are all problems of special difficulty.

By using stories, rhymes, hero-worship, dramatization where ideals are lived, the direct and indirect suggestions may be used for good and the imagination stimulated.

**REFERENCES:**

1. Golden Rule Series of Readers.
2. Seguin on Moral Education.
3. True Citizen.

**CONCLUSION**

As Special Classes for sub-normal children have been organized in but comparatively few locations in the United States, and many of them are still in the experimental state, there is an absence of anything like a complete Course of Study for such classes.

Teachers who have had experience in this line of work are not anxious to have a definite course outlined. They feel that with the elastic conditions that now exist there is room for each teacher to put her own individuality and ingenuity into the work. However, if a definite course be outlined, it should not demand that a limited time be allowed for the completion of any given part of the work, as allowance must be made for individual differences in children.

Teachers who are about to enter the work have expressed a keen desire for something in concrete form to base their work upon. It is for the benefit of such teachers who are taking up the work in the Duluth Schools and elsewhere that these suggestions are offered. They are given only as suggestions and with the hope that they may be a source of encouragement and a tentative help to teachers who are planning to teach in Opportunity Classes.

It will take time to educate the public to the fact that the pupils of the Special Classes ought not to be put in regular grades, for this reason, there is a demand that the Opportunity Classes be given the work of the regular class, and it seems best to adapt the course of study as far as is possible to the graded course of study in academic and industrial work. It encourages the children too, to know that they are doing the same work as their friends in the regular grades and at the same time doing a number of other things along industrial lines that their friends are deprived of doing. Any condition that creates a happy frame of mind in the children should be provided for.

There is no reason why any cheerful, experienced, conscientious, sympathetic, resourceful, grade teacher should hesitate to give her services to the improvement of pupils in Special Classes—it is to encourage such teachers to take up this work that these pages are respectfully submitted.

(Signed) KATHERINE MEEHAN,  
CLOE M. THIBERT,  
NELLIE T. ANDERSON.

## PUPILS' OPINIONS AS TO THE RELATIVE WORTH OF DIFFERENT METHODS OF TEACHING EDUCATIONAL PSYCHOLOGY.

By J. MACE ANDRESS

One of the difficulties in the art of teaching is an ignorance of the relative worth of the methods which we employ. As teachers we all perhaps are somewhat prone to have faith that the ideals we have set up are the best and that the methods we have used result in a large measure of success. As teachers, too, we are also apt to disregard or remain in dense ignorance of the opinions of the pupils whom we teach. Yet with all the vast gap which may exist between the maturity, insight, and professional view of teachers and pupils, it is obvious that the opinions of pupils have some significance. The teacher who knows the opinions of his class knows something about their attitude, at least, and that is often invaluable. Then, too, a knowledge of class opinion may confirm his methods of teaching or in part perhaps lead him to question results which he believed had been achieved. The purpose of this paper is to present briefly the judgment of seventy-nine pupils of the Freshman Class of the Boston Normal School as to the relative effectiveness of methods of teaching used by the writer. Before considering the investigation itself it would be well perhaps to review briefly the nature of the course given, its aims and methods.

It is obvious that the teaching of psychology should be dominated by definite and practical aims.<sup>1</sup> The purpose of the normal school itself suggests that the psychology taught should assist the teacher in her work. An essential feature of all teaching is learning. No matter what the teacher may say or do, if the children do not learn, no teaching has taken place. Before the advent of child study it was common to think of the teacher as one who taught subjects like arithmetic and history, but now all careful students of educational problems realize that the verb teach has two objects. The teacher not only teaches perchance history or algebra but she teaches somebody, John or Mary, for example. It is the belief of the

<sup>1</sup> See Andress: "The Aims, Values and Methods of Teaching Psychology in a Normal School." *Journal of Educational Psychology*. Dec. 1911.

writer that the study of *psychology in a normal school should lend itself to a sympathetic and intelligent study of John and Mary, particularly to the way they learn most effectively*. To get an insight into the learning process of children makes possible the *second great goal of educational psychology*, namely, *the formulation of practical principles of teaching*.

Four periods of 45 minutes each are devoted to the course in the first of the three years of the Normal School course. In all except one of these periods, which is given over to the lecture, the class is divided into five sections. Although the work of these four periods is dovetailed together in conformity to the aims just mentioned, there are in reality two courses which might be designated courses A and B. The following scheme shows the general character of the whole course:

	Time	Scope	Purpose	Common Purpose
A. Whole Class	Lecture (one period)	Covers mental development of child.	Discover how child learns.	Formation of principles of teaching children.
	Quiz (one period) in sections	Discussion of lectures, reading, and child observations.		
B.	Class Experiments (two periods consecutively) in sections	Experiments correlated with practice and class discussions.	Discover how pupils learn, so as to better appreciate the child's difficulties.	

In trying to achieve the aims suggested the writer has made use of five different methods.

The first method is that of the *class experiment*. Although normal school pupils have been learning longer than they can remember they have studied their own learning process little if any. They have forgotten how they learned some of the most important things of life such as reading, writing, oral speech, etc. Not only are they quite ignorant of the elements involved in learning but they fail in large measure to appreciate the problems which every learner faces as he tries to master something new. In a series of experiments the pupils find out the nature of learning by trial and error through trying to trace stars by looking at the hand and star outline in a mirror. A more involved learning process necessitating usually some reasoning is brought out by trying to open and shut the Healy Puzzle Box. Pupils get a first-hand acquaintance with the psychology of habit by actually forming a habit<sup>2</sup>

<sup>2</sup> For a more detailed description of this phase of the course see Andress: "The Study of Habit in a Course in Psychology (With Special Reference to Health Habits)." *The American Journal of School Hygiene*, Sept. 1917. "Adventures in Habit Formation," *The Boston Teachers' News Letter*, June, 1919. "The History of the Breaking of a Bad Habit," *The American Journal of School Hygiene*, Sept., 1919.

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such as cleaning the teeth, arising at a particular time in the morning, correct posture, etc. Starch's "Experiments in Educational Psychology," (MacMillan Co.) is the basis of the experimental work, although experiments other than these from the rich field of experimental psychology are used freely. All experiments are carefully selected. Only those which would seem to give some practical insight into the learning process are chosen. Serious effort is made to get results of human value and to avoid a worship of method. The experiments are written up with care by the students. Some of the generalizations are made in class when the experiment is performed, but something in the way of generalization, is always left for the pupils. The necessity of careful conclusions based on facts is clearly emphasized throughout the year. About one-third of the entire time of the course is devoted to class experiments.

A second method is the *observation of children*. It is evident that an intellectual and sympathetic knowledge of childhood is necessary for successful teaching. Too often courses in educational psychology ignore this aim, or, if sought, it is hoped to be attained exclusively through laboratory or lecture work or through copious readings. The study of the child himself is disregarded. Such a study seems necessary if a human attitude and relationship toward children is to be built up.

Many entering pupils are quite familiar with children because they come from relatively large families and often have brothers and sisters younger than themselves. Such experiences are invaluable because of the natural association which has sprung up between them and specific children even if their contact with children has not led to something like systematic and scientific observation and to conclusions of great worth to pedagogy. A large proportion of the class has had little direct contact with children for many years, some being only children of a family. If questioned they are likely to admit that they feel ill at ease in the presence of children, that they neither know what to do or say. Both classes of pupils—those who have little or much direct contact with children—have slight intellectual or psychological insight into child life. Sometimes frequent association with children may have an unsuspected influence as students guided by the opinions of their elders may have absolutely erroneous opinions of children. Much effort is required by the teacher of psychology to remove these prejudices. The ordinary normal school girl aged 17 or 18 years who is just beginning her professional career has interests that are as far away from those of little

children as the poles of the earth. To most of these students childhood presents a world almost as strange and foreign as that of the Australian Bushmen. This world needs to be approached with caution and so studied and investigated that it loses its foreign aspect and takes on additional color and charm.

As in botany or geology pupils are required to study plants and rocks and mere textbook work is considered an ancient and fruitless device, so in our work in educational psychology students are required to observe children. Each pupil observes one child throughout the year; in the second half year pupils are asked to observe an additional child or perhaps through a series of visits to investigate some special problem of child psychology or child welfare such as the training of children who have speech defects, how the city deals with its juvenile delinquents, the education of the blind, deaf, feeble-minded, etc.

For the observation of individual children McMannis's "The Observation of an Individual Child" (Warwick and York) furnished a helpful outline although it is supplemented by copious suggestions. Every child is studied from the point of view of his heredity, home surroundings, health and mental development. The author has found some excellent observations on the vocabulary, morality, drawing instincts, gang impulses, etc. of children. The child in school cannot be studied to advantage because of the artificiality of his surroundings; therefore pupils are asked to make practically all their observations on children outside of school and while they have no suspicion that they are being observed. Pupils are also encouraged to do a little in the way of teaching little children something, as, for example, a game, simple handwork, etc. A rough notebook is kept to record all observations made, and from these facts a paper having a specified amount of organization is prepared at the close of each semester. Such a concrete study of children is believed to inspire a living and intelligent interest in children which will be of inestimable value professionally.

One fourth of the time of the course is devoted to a *lecture*. There is one lecture of forty-five minutes every week throughout the year. The lectures concern themselves with the problem of how the child learns. Topics considered are as follows: the significance of infancy, the physical differences between the child and the adult, learning defined, the relation of health to learning, the development of the child's senses, the instincts and how they may be directed, the development of language, drawing, dramatization; and at the latter part of the year the psychology of school subjects such as reading, writing, draw-

ing, number, and oral and written English. The lectures seek to avoid technical terms so far as the purpose of the course will permit. The language is simple and to the point. Summaries are always made at the close of any large division of the subjects. The observations being made of individual children are studiously referred to both to make the lecture interesting and connect it with real life, and also to guide the observation. The results of the class experiments performed are also woven into the lectures. Infrequently slides are shown and class experiments are performed in connection with the lecture. So far as possible readings are assigned in Kirkpatrick's "Fundamentals of Child Study" to run parallel with the lectures.

The fourth method is the traditional one of assigning *reading* from text-books and reference books. Colvin and Bagley's "Human Behavior" (Macmillan) is assigned in connection with the class experiments. Kirkpatrick's "Fundamentals of Child Study" runs parallel with the lecture. Many suggestions are given as to valuable references in the library but no assignment is required except the chapter on habit in James's "Psychology." It has been the belief of the writer that beginning students in educational psychology are unprepared to do much reading, partially because of the newness of the field and partially because of the many new technical terms that are used; it is also no exaggeration to say with no reflection on the authors, that practically all textbooks are written in such a style that they are exceedingly dry for young people. Therefore a large amount of reading without careful preparation through experiments and observation and definite assignments will be apt to arouse a profound dislike for the subject.

The *class discussion* represents a sort of clearinghouse for all the other activities of the course. Here the class experiments, observations of children, the lectures, and reading are gone over somewhat in detail. One entire period of the week is devoted exclusively to oral tests and class discussion relating to the reading in Kirkpatrick, the observation of children, and the lecture. The character of this discussion naturally changes somewhat from week to week. In a double period devoted largely to experiment there are tests on the reading in Colvin and Bagley's "The Human Behavior" and the experiments. In a discussion of the reading the instructor is not satisfied merely to get the pupils to report accurately what is in the book but to organize their facts, to get a new synthesis, to see the problem presented in the book from a little different angle or to apply the knowledge thus gained to some concrete and practical problem.

The particular methods mentioned above have been used with something like the same organization for several years. For some time he has wondered about the relative value of these methods. Finally he decided to get the opinions of the members of the class themselves. In a written paper each pupil was asked to arrange the five methods in the order in which they appeared to them to be most valuable in getting a grasp of the principles of educational psychology. The following table and the graph show the results of these judgments. In the table the numbers under the numerals 1, 2, 3, 4 and 5 indicate the number of the pupils in the class who voted that a particular method was first, second, third, fourth or fifth.

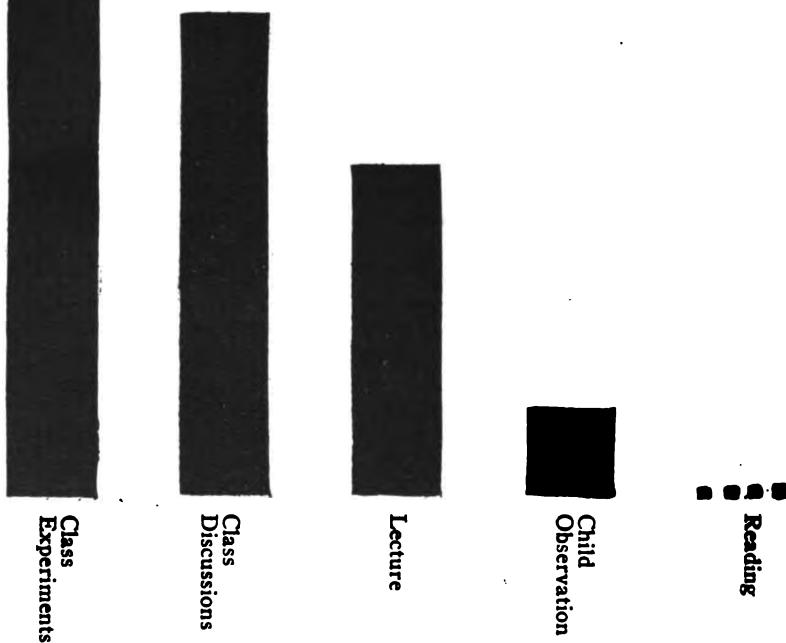
	1	2	3	4	5
Class Experiments .....	38	23	8	7	3
Class Discussion .....	22	19	21	16	1
Lecture .....	15	19	17	27	1
Observation of an Individual Child....	4	14	25	26	10
Reading .....	0	4	8	3	64

According to the pupils' judgments the methods are effective in this order: (1) class experiments; (2) class discussion; (3) lectures; (4) observation of an individual child; and (5) reading.<sup>8</sup> The difference in value between the lectures and the observation of an individual child is so slight that the precedence of one over the other can not be taken seriously. With another class or through some little emphasis on one method rather than another the conditions might be exactly reversed. The relative positions of class experiments and reading will doubtless make the most striking impression. Although the course was being conducted on the principle that the pupils of themselves were not capable of doing much reading and preparation for the reading was invariably made through the lectures, experiments, and class discussions, the ineffectiveness of the reading is astounding. If such preparation had not been made one wonders whether all the pupils in the class would not have been unanimous in putting reading in the fifth place. The class discussion easily wins the second place. This is perhaps not so surprising. The overwhelming verdict of the class in putting the experiments first and the reading last suggests a very important principle of teaching psychology.

Before generalizing further it should be noted that the pupils in their paper were not only asked to state their preferences of method in the order of their importance but also to give reasons why they made their preferences.

<sup>8</sup> Since the writing of this paper the same inquiry was made of the class which finished its work in psychology in June, 1919. The results confirm the general conclusions already reached.

Graph illustrating the striking difference in the value placed upon different methods of teaching psychology, especially between class experiments and discussion on one hand and reading on the other as shown by the first preference of sixty-nine normal school students.



The following are two of the best papers presented:

1. Class discussions, because the ideas and opinions of a group are always helpful since they are so different.
2. Experiments, because they definitely fix in mind the points which have been made in class discussions and lectures. They are concrete.
3. Lectures, because they give straight-forward facts in proper relationship to each other with no interruptions; yet they are not so helpful as class discussions because there is

not time to discuss each question as it arises and the class is too large to allow the expression of the opinion of each individual.

4. Observation of an individual child. This has been of less helpfulness to me because it has been difficult for me to get in contact with a given child often enough and long enough to see the principles of psychology in practice.

5. Reading from text-books. This has been least helpful of all because it is so indefinite and abstract. It is much more difficult for me to grasp things from books than from actual experience (experiments) or discussion.

1. Experiments have been most helpful to me not only because they held my interest and attention but because I could see and understand for myself how the theories and laws of psychology were formulated through experiments.

2. Direct observation of a child gave me a keener and more active interest in all children and aided me in comprehending how they learn.

3. Class discussions have brought various questions to my mind from different angles, and through these points were made clearer and fundamental principles were more vividly brought out.

4. The lectures were next in helpfulness; they illustrated by many examples the most important principles.

5. Although the text-books were helpful still I think they were last on the list, for without the other kinds of work, I fear the mere reading and trying to digest what somebody else says would not prove beneficial.

To summarize, I might say that the concrete experiences proved most valuable.

A canvass of the pupils' papers reveals some of the reasons for their judgments. While the writer would have put the experiments first, he did not expect this opinion to be shared in by the class extensively because much laborious and careful work was required by the class in writing up the experiments. Only a few of the pupils complain of this however. Here are a few of the typical comments on class experiments:

(1) "Seeing is believing. The experiments have been helpful because we saw the thing done right before our eyes as we did it ourselves; in that way a deeper impression was made."

"They held my interest and attention. I could see and understand for myself how the theories and laws of psychology had been formulated."

"I was able to see things for myself."

"Experiments seemed to clinch the ideas which the lectures and the reading brought out and were a firmer proof."

"Experiments did not help me so much as they should have. It was a very unpleasant task to write up the experiments, and as a rule, we do not remember unpleasant things."

"I could see the exact results and processes worked out before me. When I came to read of a certain topic in the book, I was able to think back to the actual experience I had had with the same subject. As a whole the experiments seemed to clear up all doubts that remained from the reading in the books."

"Experiments clinched facts in my mind and made psychology a living thing."

"Whenever I hear or think about any psychological principle, I always think back to an experiment which illustrated this principle. The laws demonstrated by experiments I remember.

"These have helped me to clear up things which all the reading from textbooks could not do. But for experiments I probably could never have gotten a clear idea of what perception, trial and error, mental images and fluctuation of attention really were."

"I never really understood what part attention played in the process of learning, although I had read about it in the textbooks, until I performed the experiments myself. The experiments convinced me of the truth of statements which reading from a textbook often fails to do."

"Experiments helped me most because then I was able to come in contact with the actual things and draw my own conclusions. I did not have to take the theories of former psychologists, but I made those theories first hand."

(2) "The class discussions," as one pupil wrote, "unified all the work." It was a place where loose ends were tied together. Vagueness in all other phases of the study were cleared up, breadth of view was given through many personal experiences and direct applications. About 27 per cent of the pupils regarded these discussions of first importance and only one pupil out of the class of 79 put it last. Selected comments follow:

"Class discussions were especially interesting to me because I could hear what other people thought of the various problems proposed."

"They gave a chance for many interesting points of view."

"They cleared up points that had not been clear before."

"I was able to get original ideas from my classmates and to express my own ideas."

"Difficulties were brought before the teacher and straightened out."

"To me class discussion is a most helpful thing. After an experiment, a lecture, a textbook reading there is often a jumble of ideas in my head, and it is only by listening to the ideas of others and expressing my own difficulties that I can form a conclusion."

"Often the class discussion is as interesting as the rest of the work because the experience told by the other students makes us realize that psychology is a practical thing."

"The class discussion often straightened out what had puzzled me in my reading. In the discussions concrete illustrations which made the theory clear and concrete were often referred to."

"The class discussion brought up all phases of the work and the real practical values relating to each principle. I came to realize in this way how vastly important each principle was and what a large part it played in my own life."

(3) Although the lectures had comparatively little to do in the way of providing first-hand experience, it is rather surprising to find so large a proportion of the class, about 20 per cent, making it of first importance. A certain type of student evidently finds this method highly desirable. Its superiority over the reading is surprising as so much has been said against it. Only one pupil put it last. Differences of opinion seem pretty well distributed for all classes of judgments except the last. Here are some of the comments:

"The lectures were helpful because they dealt with child-life and enabled me to get points which I could carry over to the observation of children."

"They gave general ideas on which to build the important psychological principles."

"The lectures were convincing, easy to follow and understand."

"The lectures gave principles and explained them by illustrations."

"They gave me fundamental points in a more concise way than the book."

"I enjoyed the lectures because I understood them better than if I had read."

"Certain important points were made emphatic."

"Lectures acted as suggestions in that they made me read about different psychologists."

"The talks given were very clear, concise and definite. Illustrations of principles were always given. I think these talks were more helpful than the class discussions because there was so much more material brought forth in a short

period; no opposing or competing ideas were presented by the students so as to confuse one."

"I was so busy writing during the lecture that I think I missed some of the principles for which the lectures were given. The lectures were much more interesting and easier to understand than the text-books."

"The lectures helped me more than anything else. When a principle was stated, a definite and clear example was always given that seemed to be just the one necessary to make clear the meaning of the particular principle. I can always understand anything better if it is explained by word of mouth rather than by reading."

(4) The observation of an individual child, representing a good deal of concrete first-hand experience, which is referred to so many times with appreciation by the pupils, ought apparently to rank higher, perhaps above the lecture. Whether it merits this distinction or not there are several reasons why it probably did not rank higher: (1) there can be no direct supervision of the students as in the case of experiments performed in class; (2) there is no satisfactory way of checking up the time spent in observation—it must necessarily be somewhat incidental; (3) a certain proportion of the pupils has no good opportunity for observation. Sometimes there is no child near at hand and every observation necessitates the spending of time for that purpose alone. Pupils who have children in their own home or in the same flat can observe much and quite continuously without any special expenditure of time and effort; (4) the school year covered by this investigation (1917-1918) was broken up at about the middle of the year by an unexpected vacation due to the shortage of fuel. This vacation was further broken up and prolonged by an illness of the author for three weeks. Consequently this was probably the most unfavorable year for the observation of children since the scheme was inaugurated. So many lines of investigation were not suggested so that the observation was confined largely to the observation of a single child. The work could not be checked up with so much care. The interruptions naturally tended also to abate the enthusiasm with which the work began. Notwithstanding these obstacles the judgments as to the worth of the direct study of children were surprisingly high. Although close to 13 per cent put it last, nearly all explain it as being due to a lack of opportunity to observe. In the vast majority of cases it ranked above the reading. Five per cent of the pupils put it first and 17 per cent put it second. The following comments show just how these observations were helpful:

"I have learned much about dealing with children."

"My observations made many things I had read about children seem especially clear to me, since these facts were demonstrated right before my eyes."

"I was able to see real children and understand their doings better than if I had spent the time in reading books."

"The observations gave me a keener interest in all children and helped me to comprehend how they learned."

"The observation of an individual child seemed to me to be a general review of all the laws, principles, and characteristics of child life. In my study I found examples of individual differences, imitation, association, memory, coöperation, etc."

"My observations of a child were helpful in my psychology as I was able to base the facts I learned in class on something concrete."

"This like the experiments seemed to be a very convincing proof of the points brought out in lectures, reading and class discussions."

"The observation of an individual child was a sort of an experiment. It helped me to discover for myself the things that a child enjoys, what games he likes to play, how he learns, and the effect the environment has on a child's life. These things would not have been nearly as interesting or instructive if I had been obliged to refer to a textbook for information about children."

"I feel I know more about children and more about their likes and dislikes through my observation."

"It is much easier to learn about children by observing them than to read all the books that were ever written about them."

"I think the observations led me to observe children more. I have taken a greater interest in them since I began to observe one child."

"When I observed the individual child I learned a great many new things. The difference between children and adults became clearer, and I had a great desire to know more about psychology."

(5) The comments on the reading throw a flood of light on the attitude of the beginning student of psychology toward textbooks. While all pupils seemed to feel that the textbook had some value, this value was grudgingly admitted. The textbook to practically all was the *bête noir* of the course, as most of these quotations show:

"Reading was the least helpful to me because I was unable to grasp the ideas."

"The reading was hard to grasp at times, had to be done in a sort of rote way."

"Reading was helpful because it gave me very clear definitions and examples from which I could construct definitions and original examples in my own words."

"Reading I have put down as least valuable, yet I would never recommend leaving it out. I think the other lines of work furnish more thorough first-hand information."

"Books were least helpful to me. I believe this is due to the fact that they had to do with the abstract too often. They seemed to be very distant from my experience."

"Reading from textbooks was a long dry process. It did not seem to help me as much as other methods of work. Of course, I gained certain facts and laws, but they would have been hazy and uninteresting if the experiments had not accompanied them."

"Reading takes last place because what I have read in the books does not stay with me."

"I found the textbooks very difficult to understand."

"I think reading is the least helpful part of the course. It is necessary perhaps that we should read from textbooks, but unless the reading is assisted by experiments, observation, lectures, and discussions, it is of practically no value."

"It was helpful, but only as it confirmed what I had learned from other sources mentioned."

"The reading from textbooks was, I am afraid, of little help to me. I would read a chapter over and over and not get much out of it."

"The reading from the textbooks was helpful only when what we read was made clearer by class discussions and experiments."

"The textbooks did not help me much because when I got through reading a chapter I did not know much more about the subject than I did when I began."

"Reading from textbooks gave me the least help because the reading material was dry."

"I have placed the textbook reading last, not because I would eliminate it, for it is a fine thing since it helps to do individual study, but this method should not be used entirely. It is not interesting enough. It is sometimes hazy, then it is tiresome and when tiresome interest wanes and no desire to continue is afforded."

"The reading did not arouse any enthusiasm. It often left wrong impressions or at least hazy ones."

"The reading did not make me wish to actively pursue my

work further, whereas both child observation and experiments did."

The reader in glancing over the facts presented in the table, graph, and comments of these seventy-nine pupils may say that these judgments were made by immature pupils and hence are not to be relied upon. Doubtless there is some truth in this, but they are worth something as reflecting the opinions of a group of earnest young women who have completed one-third of their regular course. It represents their attitude anyway, and that is important. Then, too, their opinion is significant because it is so overwhelmingly in favor of one kind of method as opposed to another. If this opinion also coincides with well known psychological principles of learning we may find it sound and suggestive.

The most conspicuous feature of this study is the attitude of the beginning student toward the textbook. Eighty-one per cent of the pupils put it last in importance. They complain that the reading is "abstract," "distant from my experience," "hard to understand," "had to be learned by rote," "difficult to remember," "of no particular value unless assisted by lectures, discussions and experiments," "hazy," "vague," "often left wrong impressions," "unconvincing," "aroused no enthusiasm" and "left no desire to pursue the study of psychology further." In striking contrast to this testimony of the inefficiency of the reading, pupils with few exceptions testify to the effectiveness of the class experiments as "making a deep impression because it was done right before my eyes," "clinched facts and made psychology a living thing," "cleared up all doubts that remained from the reading of the textbook" and "gave a clear idea of the mental processes involved in learning." It might be thought that the lack of interest in and appreciation of the reading is an indication of laziness on the part of the pupils. This may be true to some extent, but it is significant that a half dozen of the brightest and most earnest students in the class were unanimous in putting the reading last. It was evident to the writer as he read all the comments of the pupils that the textbook was the grim specter that would not down. Again and again pupils refer to the experiments and the other methods as being much more effective than the reading. This is demoralizing because it is so vague and abstract. Pupils never seem to be certain whether they have mastered their reading lesson or not, and when they are asked to make concrete application of the principles developed in the reading they feel a general helplessness. Even when they have mastered certain facts to the extent that they can repeat them verbatim or even put them into their own words they have

little belief in their truth. They complain that they cannot see those facts or principles in relation to children or school practice. This study shows, and probably few teachers would doubt it, that reading which is not thoroughly discussed in class is not only useless, but it is worse than that for it usually leaves wrong impressions and a dearth of interest.

There are at least two distinct principles which seem to underlie interest and efficiency in teaching educational psychology to beginners. They are very old but frequently disregarded by teachers of all subjects. A method is likely to be successful and attractive to the extent that pupils are led to make actual and worthy responses to situations created by the method. It is a platitude in psychology that mere impressions are not educative. It is the response to stimuli that educates, and, as is well known, there is a powerful and instinctive interest in activity, both mental and physical. If pupils in the presence of situations presented by the teacher do not do anything, do not become self-active to some extent, then the result is worthless. This gives us a key to the pupils' judgments. Most of the reading, because of its abstractness and aloofness from the pupils' life, leads to the making of many impressions, but outside of a kind of mechanical memorizing process the responses are usually confused and feeble. Apparently pupils are seldom led to think. The vagueness of the text makes it almost impossible. There is little possibility of connecting it with life or education. The pupil finds it difficult to do anything but "learn the words." The class discussion, if properly directed through the presentation of vital problems accompanied by free, informal and spirited discussion, involves actual responses on the part of the pupils. They may frame questions that spring from their interests and difficulties, they bring up illustrations from their personal experiences that may be associated with deep emotional tendencies, they seek to express their opinions in their own words, and vagueness gives way to clearness. At the close of a period of spirited class discussion the pupils have made many responses that are educative. They have pooled their experiences, and through a process of sorting and sifting they have found certain principles. They have really put themselves into the work and have made it a part of themselves. In the class experiments, like the class discussions, problems are raised, but the responses elicited are more definite and even more intelligible. Every pupil in the class responded to a situation under controlled conditions and he then critically examines his own response and those of the other members of the class. All are active and all reach conclusions that are

definite, vivid, and convincing. The observation of an individual child again leads the pupil to do something definite; he observes, classifies, makes graphs, experiments and draws certain conclusions which are recorded in writing. This arouses interest and clear ideas. Nothing is really more interesting than human life, and the study of children in any kind of sympathetic way is not only a revelation of child life but of the pupil's own life as well. The lecture is apt to sink to the same plane as the reading, but it has these advantages. It may be adjusted to the mental background of the pupil in relation to concrete experiences of observation and experiment to a much greater extent than the book. If properly planned it may stimulate pupils to make certain observations of children which will eventually be recorded in their notebooks. Then, too, the lecture is delivered by a human being who naturally has some degree of enthusiasm which may be stimulating to pupils, leading them to think and feel differently than they ever did before. Most books are far inferior to spoken words.

As the writer examines the pupils' papers he finds that *interest and value seem to be connected with those methods which stimulate and allow self-activity and the enlistment of the pupil's own self.*

A method is also likely to be effective if it is based on and attached to concrete experiences. *Most pupils do not seem to think of reading as being an actual experience.* It is a kind of ghost or dream experience lacking in flesh and blood, a fanciful experience in which the spirits speak a foreign and monotonous tongue. Not only is this dream world unattached to living reality but it is so dull and insipid to most pupils that they have little ambition to make such attachments. It is inevitable that in learning a new subject like psychology a new vocabulary should be acquired. But the learning of such a vocabulary should grow out of past concrete experiences and should be capable of being applied to concrete situations under the guidance of principles. To do otherwise, to learn "words, words, words," is to run counter to one of the most vital and inspiring movements in the history education, a movement led by Rousseau, Pestalozzi, Basedow, Colonel Parker, and Dewey. Every student of psychology in meeting the words on the printed page should be able to translate them into concrete experiences. Apparently few students are able to do this. It is here that the experiments play a distinctive part. The pupil sees a psychological principle worked right out before him. He himself takes part in the process and deduces his conclusion from facts, so that the principle becomes

clearly defined. The observation of children serves the same purpose. The pupils' experiences are again concrete and they offer opportunities which could not be made clear by experiment. In the laboratory the teacher cannot arouse anger, fear, the collecting impulse, the growth of language, and then submit it to careful analysis. But in observing children all these manifestations may be studied in their setting at first hand. Without concrete and "real experiences" the work in psychology is likely to be a mere medley of words. This at least seems to be the testimony of these students.

Does this mean that textbooks in psychology should be entirely discarded and that pupils should depend entirely on first-hand experiences from which to evolve psychological principles? Certainly not. No individual in the study of any modern science can be expected to put everything to an experimental test. We can not all sail around the earth to know that it is round. That would be absurd. But it is equally ridiculous to expect pupils to become vitally interested in psychology or get a grasp of psychological principles by a mastery of words which have not been translated from concrete experiences. In the case of the beginning student who approaches a literature which bristles with new terms and technical difficulties, first-hand experiences should play the most important part. The introductory course in educational psychology should be a simple and natural introduction to the reading so that the pupils in advanced courses in psychological and pedagogical literature may unlock their treasures. Without such a fund of crystallized experience advanced reading is not likely to be profitable. It repels rather than attracts. Every student ultimately should, of course, be able to think in abstract terms without always consciously turning them into the concrete.

This investigation confirms the writer's belief in the relative worth of the different methods employed, but it was confirmed with an emphasis which exceeded his expectations. The contrast between experiments and reading looms larger than he anticipated. It suggests that he might use even more caution than formerly in preparing for the reading. One of the most severe arraignments of the reading is its tendency to deaden all interest in psychology and to inspire a fear for anything labelled with that name. It is evident that great care must be used in preparing the pupil so that he may take up the reading with interest and success. To assign reading without such preparation involving clear directions as to what is to be looked for, or to assign it without checking it up afterward in class discussion, would seem to be a dangerous method of procedure. The assignment of reading is evidently some-

thing which requires very careful study on the part of a teacher of psychology. This study also shows the value of direct observation of children, but it also indicates that this method, if pursued more vigorously, ought to yield greater results so that it might eventually rank above the lecture. The opportunities are vast. The class experiments have abundantly justified the time spent on them; so much so that the writer doubts whether any course in educational psychology, no matter how brief should be offered which does not have a backbone of experimental study. Any of the methods suggested seem to be worth while if utilized in the right way.

This study seems valuable not only in relation to the teaching of psychology but also in the teaching of other subjects. Is it not true that we learn best those things that involve vivid personal experiences? In the teaching of history, civics, hygiene, geography, general science, and other school subjects would it not be more profitable to put the children in situations where they will get real experiences with processes themselves rather than with mere printed words? The whole trend of this movement in the study of psychology or any other subject might be interpreted in the spirit of the student who wrote these lines:

"I do not underestimate the value of the lectures or the textbook, but I believe that when I have forgotten many of the things I have read or heard in the lecture hall, I will still be able to recall those things in which I took a personal part."

## PARALLEL LEARNING CURVES OF AN INFANT IN VOCABULARY AND IN VOLUNTARY CONTROL OF THE BLADDER.

By CLARK L. HULL and BERTHA IUTZI HULL

The present report is concerned chiefly with the progress of a young child in securing voluntary control of the bladder and in the acquisition of spoken vocabulary. There is already a considerable body of literature on vocabularies of early childhood but despite the peculiar insistence of the problems involved, the present writers have not been able to find any systematic studies of the learning processes concerned with urinary control. It is entirely possible that if this obscure chapter of child psychology were better understood the number of cases of enuresis and quasi enuresis might be considerably reduced. The only observations that we have been able to find are more or less casual remarks made by medical writers in the course of works on the care of children. These are concerned chiefly with the age at which control should be established and with methods of training. Reference will be made to some of them below.

The subject whose behavior is made the basis of the present study is a female child born of a primipara in the month of August after a normal and uneventful period of gestation. At birth her weight was six and three-fourths pounds. Grasping reflexes were vigorous though probably not strong enough to support her entire weight. Similar reflexes were observed in the feet. Despite great care in the matter of diet, appetite was rather indifferent during the second year and weight throughout was slightly less than Holt's norms for girls. Teething began early (sixth month) and proceeded rapidly with little suffering. None of the contagious diseases of childhood were encountered during the period here reported though she occasionally had colds. She was very active and especially persevering in infantile projects. She crept at ten months and walked in the middle of the thirteenth month. Her first real words were spoken at seventeen months. She had a vocabulary of 129 words at two years and one of 500 words at 28 months. At the latter date she had a reading vocabu-

lary of 20 words.<sup>1</sup> At three years she had a reading vocabulary of 70 words.

At the age of 28 months she was also given the Binet-Simon tests (Stanford revision) by the first author under excellent experimental conditions. She pointed to the five parts of the body correctly and the five objects. She named girl, cat, apron and basket from the "Dutch Home" scene; man and girl from the river scene; man, house, tree and basket from the post office picture. She gave sex correctly, first and last name and repeated, "I have a little dog," but failed on the other two sets of words. All three of the groups of three digits in the alternative test for three years were also repeated correctly. She repeated one of the series of four digits in the four year tests but failed on all the other tests for that year. This yields a mental age of three years and two months or an intelligence quotient of 135. If the tests had been given with equal care by a stranger as was the case in the standardization of the Stanford Revision, the score might have been a little less.

The mother before marriage was a trained nurse with some university work especially in psychology. The father holds a Ph.D. degree and is an instructor in psychology at the University of Wisconsin.

There seems to be little difference of opinion among medical writers as to the best method of teaching children to control the bowel and bladder. Dennet for example says (3, 72) that the child should be placed on the chamber every hour of the day beginning with the eighth month. Others would begin the practice somewhat earlier (5). It was begun with the present subject at about the eighth month, though records were

<sup>1</sup> We had been teaching her a few minutes per day for about six weeks at the time. The method was to cut from a primer the names of objects in which she was interested and paste each on a 2 x 5 inch blank card. On the opposite side of the card would be pasted the picture of the object, often in bright colors. After the word had been read the card would be turned over at once to see if it had been read correctly, thereby strengthening the association. This technique proved extremely attractive, evidently appealing to her play instincts for she would gather up her cards several times a day and come to us saying "Reada carts!" Apparently a child may learn to read much earlier than is ordinarily supposed. (13)

It was noticed that she seemed to recognize the words almost as readily wrong-side up as right. Accordingly when she had eleven words learned, we presented each word to her seven times wrong and seven times right side up, and measured with a fifth-second stop watch the time elapsing from the ocular fixation of the word to the spoken reaction. The same word never came twice in succession. The two ways were alternated irregularly to equalize the effect of practice. The seventy-seven reactions each of the inverted and correct positions averaged respectively 1.97 and 1.52 seconds. The inversion thus caused an increase of only 30% in reading time.

not taken until early in the ninth (calendar) month. An examination of these records shows that we fell short of Dennett's strenuous program in the frequency of the trials. An ordinary closet bowl was provided with a supplementary seat suitable for a young child. This was used instead of a chamber. During the early months of the experiment, micturition would often not take place for half an hour or even longer. If it took place within 20 minutes or thereabouts, a plus was recorded on a score sheet placed conveniently for the purpose. If not, the trial was usually given up as a failure and a minus recorded. From these data taken by months the per cent of the total trials which resulted in successes were computed and the results taken as a convenient index of the level of control attained.

Lunar Month of Life	Sign of Score	TABLE I SCORES					Percentage of Successes
		1st Week	2nd Week	3rd Week	4th Week	Total for Month	
11	+	15	25	34	26	100	54%
	-(A)	12	20	24	30	86	
12	+	33	14	11	21	79	56%
	-(A)	16	18	18	10	62	
13	+	20	21	13	11	65	61-%
	-(A)	13	10	10	9	42	
14	+	26	20	22	16	84	63-%
	-(A)	16	18	9	7	50	
15	+	18	35	43	48	144	80-%
	-(A)	4	10	10	13	37	
16	+	38	54	44	46	182	81+%
	-(A)	14	15	4	9	42	
17	+	51	48	56	56	211	85+%
	-(A)	10	12	6	7	35	
18	+	55	58	66	57	235	90+%
	-(A)	6	9	2	7	24	
19	+	55	65	55	41	216	89+%
	-(A)	5	3	10	8	26	
20	+	46	42	53	58	199	85%(A) 83%(B)
	-(A)	7	10	14	4	35	
	-(B)	8	11	15	5	39	
21	+	48	60	59	62	229	89+%(A) 88+%(B)
	-(A)	6	5	7	10	28	
	-(B)	9	11	8	8	36	

Lunar Month of Life	Sign of Score	TABLE I—Continued Scores					Percentage of Successes
		1st Week	2nd Week	3rd Week	4th Week	Total for Month	
22	+	45	54	57	60	216	84%(A) 87+%(B)
	—(A)	8	9	12	11	40	
	—(B)	9	5	10	9	33	
23	+	68	59	40	42	209	84—%(A) 90—%(B)
	—(A)	6	7	13	14	40	
	—(B)	2	5	7	8	24	
24	+	35	47	36	38	156	82—%(A) 85%—(B)
	—(A)	11	6	14	4	35	
	—(B)	13	6	4	5	28	
25	+	45	39	45	47	176	89—%(A) 84%(B)
	—(A)	7	5	6	4	22	
	—(B)	10	12	7	4	33	
26	+	46	41	38	42	167	87%
	—(B)	5	5	8	7	25	
27	+	37	38	54	53	182	88%
	—(B)	4	6	9	5	24	
28	+	52	43	47	44	186	91—%
	—(B)	5	6	6	2	19	
29	+						•
	—(B)						
30	+	55	57	59	60	231	98—%
	—(B)	3	1	1	0	5	
31	+	63	54	47	42	206	98+%
	—(B)	1	2	0	1	4	
32	+	48	47	45	49	189	99—%
	—(B)	1	0	1	0	2	

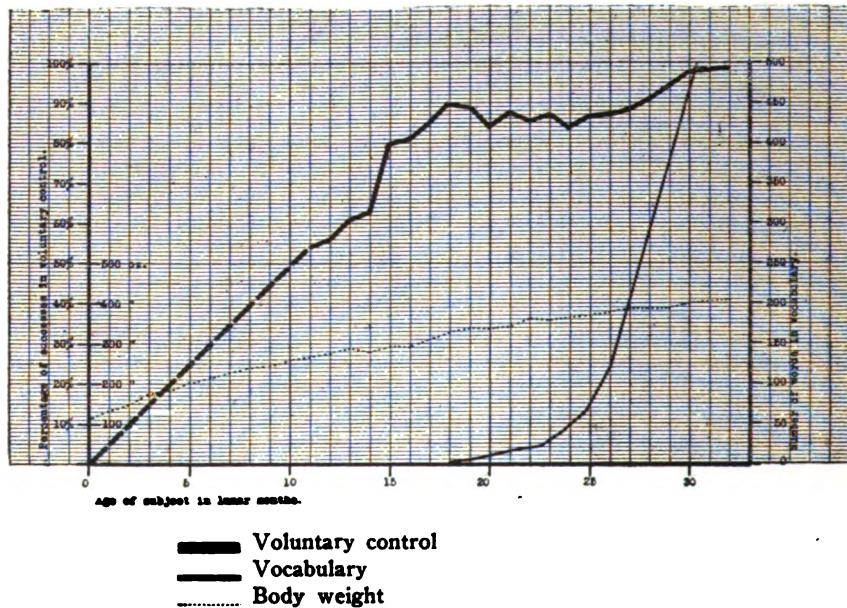
\* No records were made during this month owing to sickness in the family.

As a child becomes somewhat older however, it is also possible to record with certainty the number of micturitions taking place when not at the toilet. The number of these "accidents" in a month added to the number of successful trials, gives the total number of micturitions in that period. The per cent of successes of this total clearly affords a second and possibly more satisfactory index of the level of control attained. Accordingly beginning with the eleventh four-week

period of the subject's life, the total number of successful and unsuccessful (—A) trials are given by weeks together with monthly totals and the percentage of trials resulting in successes (Table I.) Beginning with the twentieth period the number of "accidental" micturitions (—B) are also recorded and separate indices computed on this basis, as described above.

From a theoretical point of view these two indices might be expected to represent distinct processes: the first the power to relax the sphincters at will initiating micturition; the second the power to inhibit spontaneous tendency to such relaxation while in situations inappropriate for micturition. Whether

FIGURE I.



this reasoning is incorrect or whether the two processes are so highly correlated that each serves as a measure of the other, the fact is that despite a certain amount of variation between the two, the average of the indices by each of the two methods for the six lunar months during which both were used, are almost identical. Consequently the first method was discontinued after the twenty-fifth month. The average of the percentages by the two methods is taken as the final index of control for the six months during which both were taken. It should be added that the degree of vigilance of the mother

as well as the amount of time available for such work would influence to a certain extent such indices as those described. Disturbances from this source however, should be fairly well equalized in the two hundred or more entries for an average month. In this respect care was taken to secure as uniform conditions as possible throughout the experiment. The observations cover a period of twenty-two lunar months and include over forty-six hundred entries on the original charts. The progress in acquiring control from month to month is shown graphically by the upper or heavy curve of Figure I. The part of the curve extending over the first ten of the four-week periods is a straight broken line indicating that no records were taken during this time.

The general shape of the curve proves to be that of the familiar learning curves for skill and for the simpler mental processes (7, 575,) rising more rapidly at the beginning of the learning process and continuing progressively slower as the score approaches the limit of perfection. Its most striking characteristic is the pronounced plateau beginning at the eighteenth four-week period and continuing without perceptible improvement through nine lunar months. Such an extended plateau could not result from chance and accordingly calls for explanation. Having noticed a certain tendency to lack of control associated with severe colds, the idea was suggested that the plateau might have been caused by a mild but continuous deterioration of the health during that period. Accordingly the body weights were plotted parallel to the curve of control for the entire thirty-one months. It appears as a light dotted line in Figure 1. It was assumed that any such general disturbance of the health would be shown objectively by a corresponding plateau in the bodily growth. Inspection of the curve shows however that there is no suggestion of such a plateau. Indeed in this region as in other parts of the curve, it follows very uniformly the course determined by the authoritative norms of Holt (5), though somewhat lower.

A more plausible explanation is suggested by the fact that the difficult early stages of talking (light curve, Figure I) coincide exactly with the beginning of this plateau. That walking interferes with talking has been observed repeatedly (15, 134). It is possible that learning to talk has in this case interfered with the acquisition of voluntary control of the bladder. Unfortunately owing to the lack of exact studies on this subject it is impossible to say whether such a plateau is an exception or the rule in such learning.

Medical writers disagree somewhat as to the age at which control should be established. Holt (5, 693) says that "—

control is not acquired even during waking hours until sometime during the second year, and in some healthy infants not before the end of the second year." Dennett (3, 110) and Griffith (4, 463) agree in substance, though Griffith inclines to an earlier date. Ramsey (10, 160) says that "— children do not usually gain control of the bladder function before they are two and a half years old but careful training and with occasional mishaps they may be taught control considerably earlier." Part of the apparent divergence of opinion may be due to difference in what is understood by "control." Obviously this is a matter of degree. There is control at 85 per cent, much more at 95 per cent and very much more at 100 per cent. Lack of knowledge in this matter is so great that the statement of degree of control in definite terms has not even been suggested. General observation seems to indicate that a strictly 100 per cent control is frequently not established until four or five years of age. There seems to be almost no exact information on this matter.

The curve of learning in acquisition of a spoken vocabulary (Figure I) has already been mentioned. All the new words used up to two years of age were carefully recorded by calendar months, and the vocabulary was again completely determined four months later. These vocabulary records thus cover nearly a year and permit us to get an excellent view of the learning process perhaps at its most interesting level. The form of this curve offers a sharp and striking contrast to the curve just considered. Instead of having its most rapid rate at the beginning and continuing progressively slower as is usual with the learning curves so far published, we find here the exact opposite taking place. It begins at an extremely slow rate and continues at progressively more *rapid* rates as far as investigated. Some of Terman's results (12) though obtained by a different method, indicate that by the seventh year the rate of increase has become stable and that it continues for eleven years almost without change, though ending at a slower rate. The type of curve thus presented seems so far to have been found only in analytical learning.<sup>2</sup> Ruger (14, II, 342) found it with puzzles and the writer (6) found it very uniformly in the evolution of concepts. It may be significant that the acquisition of the meaning of words is essentially a process

<sup>2</sup> Batson's curves of learning muscular habits which appear to begin with an initial period of slow learning (2, 28ff) turn out when plotted strictly to the standard principle of letting vertical distance represent amounts (not ratios) of performance in a given time, and horizontal distances equal amounts of time spent in practice, to be thoroughly conventional in their convexity (10). Thorndike (14, II, 122) has made a similar observation regarding one of Swift's curves.

of analytical learning, viz.: the evolution of concepts. And while the mental processes involved here and particularly the method of constructing the curve is by no means identical with the two studies just mentioned, there is sufficient identity to make the striking similarity of the shape of the curves suggestive.

The curve shows that no real words were spoken until the seventeenth month. At two years, there were 129 words. Beginning was thus somewhat later than the average and at two years the number of words was still somewhat below the 200 set by Nice (9) as the minimum.<sup>8</sup> The four months following however, show an average increase of nearly a hundred words per month, so that at the end of this time the score was about 10 per cent above the average of the six vocabularies for the twenty-eighth month assembled by Bateman (1). The moral of this seems to be that delay at the beginning of the language learning process is consistent with excellent progress later.

Previous to a careful examination of the records and the plotting of the curve, the writers were of the opinion that special environmental influences had played a great part in the process. During the slow period the subject played with other children almost not at all, whereas during the rapid period she played vigorously several hours every day with two older girls. But careful examination of the curve gives scant support for this view. During the twenty-fourth month while she was alone she gained 19 words while in the following month during which she had playmates she gained only 24 words. It will also be noted that the curve had already started on its rapid upward movement before she entered on her vigorous play relations.

The vocabulary at 28 months is given below arranged in alphabetical order according to the parts of speech. The list is made up according to the principles followed by Bateman. No proper nouns are included, no plurals except where singulars were not used, and no variants of verbs and adjectives except where of distinctly different form. All pronouns are given and words used as different parts of speech are given more than once according to grammatical use by the child. Words peculiar to the child or the family are given in quotation marks. With the exception of words which were forgotten, the words of the two-year vocabulary are shown in italics. No attempt is made to indicate pronunciation though in general it was good.

<sup>8</sup> In this connection it may be well to add that the subject showed at two years a slight tendency to be ambidextrous. At three years this had entirely disappeared.

## VOCABULARY

A. Nouns — *apple, apron, arm, aunt, automobile.*  
 Verbs — *am, are.*  
 Adjectives — *a, all, another.*  
 Adverbs — *again, ah ah (no), alright.*

B. Nouns — *baby, back, bacon, bag, ball, banana, band, basket, bath, bathroom, beans, bear, bed, beet, beggars, bell, bird, blocks, boat, bone, bonnet, "boo-cap," book, bookcase, bottle, bowels, box, boy, breakfast, breakfast food, bread, broom, brush, buggy, burr, butter, butterfly, button.*  
 Verbs — *bark, bite, broke, bring, brush, burn, button, buy.*  
 Adjectives — *bad, big, blue, bath.*  
 Adverbs — *back, better.*  
 Interjections — *boo! by-bye.*

C. Nouns — *cabbage, cake, candle, candy, cane, cap, car, cards, case, cat, catalogue, celery, chair, cheeks, cheese, chestnut, chicken, chin, chocolate, clock, clothes, coat, cocoa, collar, comb, cookie, corn, corset, cow, cracker, cream, crown, "cubberdeck," cup, cupboard, curtain.*  
 Verbs — *came, clean, close, comb, come, coughing, cry.*  
 Adjectives — *careful, clean, cute.*  
 Adverb — *certainly.*

D. Nouns — *daddy, daddykins, darling, dear, diningroom, dinner, dishes, dog, doll, door, doorbell, dress, drink, "dudad," dustpan.*  
 Verbs — *dancing, do, don't.*  
 Adjective — *dirty.*  
 Adverb — *down.*

E. Nouns — *eagle, ears, egg, everybody, eyes, eyeshade.*  
 Verbs — *eat, excuse.*  
 Adverb — *easy.*

F. Nouns — *face, fan, finger, fire, fish, flag, floor, flower, foot, fork, frog.*  
 Verbs — *fall, feel, find, fix.*  
 Adjective — *four.*  
 Adverbs — *fast, fine.*  
 Preposition — *for.*

G. Nouns — *garter, girl, glass, (eye) glasses, gloves, go-cart, gravy.*  
 Verbs — *get, go, gone, got.*  
 Adjective — *good.*  
 Interjections — *good bye, good morning, good night.*

H. Nouns — *hall, hair, haircut, hand, "hankie" (handkerchief), hat, head, hen, hill, hole, home, honey, horn, horse.*  
 Verbs — *have, hold hunting, hurry, hurt.*  
 Adjectives — *hard, hot, hungry.*  
 Adverbs — *how, here.*  
 Pronoun — *his.*  
 Interjections — *hark! hello! hip hip!*

I. Nouns — *ice, ice cream, iron, ironing board.*  
 Verbs — *is, I'll.*  
 Pronouns — *I, it.*  
 Preposition — *in.*

J. Nouns — *janitor, jelly.*  
 Verb — *jump.*

K. Nouns — *key, kids, "kiddyboo," kiss, kitchen, kitty, knee, knife.*  
 Verb — *know.*

L. Nouns — *laboratory, lady, lake, lamb, lather, leaf, leg, leggins, letter, "lick-dob" (liquid), light, lips, lover.*

Verbs — let, like, look, lose, love.  
 Adjectives — large, lazy, little.

M. Nouns — *momma*, man, *meat*, *milk*, minute, Mr., Mrs., mittens, money, mouse, mouth.  
 Verbs — make, move.  
 Adjectives — *more*, much.  
 Pronouns — mine, *my*.

N. Nouns — *name*, napkin, neck, needle, nightgown, nighty, nose, nothing.  
 Verb — needs.  
 Adjectives — new, *nice*, no, *none*.  
 Adverb — *now*.

O. Nouns — onion, overcoat.  
 Verb — *open*.  
 Adjectives — old, one.  
 Adverbs — o'clock, off.  
 Pronoun — our.  
 Preposition — of, on, *out*, over.  
 Interjection — *oh*.

P. Nouns — pad, pail, pancake, *pants*, *papa*, paper, parasol, peanuts, *peas*, pen, *pencil*, penny, pepper, piano, picture, *pig*, pillow, pillow-case, pin, plate, pocket, pocket-book, potato, porch, powder, preacher, professor, puffed wheat, pussy.  
 Verbs — *pick*, play, *please*, put.  
 Adjectives — poor, *pretty*.  
 Interjection — *peek*.

Q. Noun — queen.  
 Verb — *quit*.  
 Adverb — quick.

R. Nouns — rabbit, radiator, raisin, ribbon, robin, rooster, rope, rubbers, rug.  
 Verbs — *raining*, read, ride, rock, run.  
 Adjective — red.  
 Adverb — right.

S. Nouns — safety-pin, *salt*, sauce, sausage, *school*, scissors, shadow, shirt, *shoes*, skirt, sleeping-porch, sleeve, snow, *soap*, soldier, something, soup, *spoon*, *squirrel*, stairs, *stick*, *stocking*, *stomach*, stool, street car, *sugar*, suite (of clothes), supper, *sweater*, sweetheart, swim, syrup.  
 Verbs — said, say scratched, *see*, send, shaving, show, shut, *sing*, sit, sleep, spank, *standing*, sweeping.  
 Adjectives — sick, some, sore, *sweet*.  
 Adverb — so.

T. Nouns — table, table-cloth, tail, tea (towel), teddybear, *teeth*, telephone, thimble, thing, *thread*, tie, toast, thumb, toes, toilet, tongue, toothbrush, towel, town, tree, trousers, trunk, *tub*, "tummy."  
 Verbs — *take*, talking, thank, tickle, turn.  
 Adjectives — that, the three, tiny, two.  
 Adverbs — then, *there*, too.  
 Preposition — to.

U. Nouns — union (suit), underskirt.  
 Adverbs — *up*, up-stairs.

V. Adverb — very.

W. Nouns — waist, watch, *water*, wheat, whistle, window, word, work.

Verbs — wait, wake, walk, want, wash, watch out, waving.

Adjectives — white, welcome.

Pronouns — what, who.

Y. Noun — years.

Adverb — yes.

Pronoun — you.

An analysis of these two vocabularies reveals a surprising similarity as to grammatical constitution when it is considered that the second is about four times as large as the first. This analysis is given in some detail by Table II.

TABLE II  
GIVING ANALYSIS OF TWO VOCABULARIES

Parts of speech	Twenty-fourth month		Twenty-eighth month	
	Number of Words	Per cent	Number of Words	Per cent
Common nouns.....	74	57.4%	289	57.8%
Proper nouns.....	9	7.0%	34	6.8%
Verbs .....	24	18.5%	85	17.0%
Adjectives .....	8	6.2%	41	8.2%
Adverbs .....	6	4.6%	24	4.8%
Pronouns .....	2	1.5%	8	1.6%
Prepositions .....	2	1.5%	9	1.8%
Interjections .....	4	3.1%	10	2.0%
Conjunctions .....	0	0.0	0	0.0
Total .....	129	100.0%	500	100.0%

The proportions of the various parts of speech found here differ but little from those given by Tracy (15, 148). The combined nouns in each vocabulary exceed slightly the 60 per cent given by him while the verbs are in each case slightly less. Conjunctions are entirely lacking in both vocabularies.

#### BIBLIOGRAPHY

1. BATEMAN, W. G. The Language Status of Three Children at the Same Age. *Ped. Sem.* 1916, 23, 211-241.
2. BATSON, WILLIAM HOWARD. Acquisition of Skill. *Psychol. Rev. Mon.* 1916, vol. 21.
3. DENNETT, ROGER H. *The Healthy Baby*. New York, 1912.
4. GRIFFITH, J. P. CROZIER. *The Care of the Baby*. Philadelphia, 1916.
5. HOLT, L. EMMET. *Diseases of Infancy and Childhood*. New York, 1912.
6. HULL, CLARK L. Quantitative Aspects of the Evolution of Concepts. *Psychol. Rev. Mon.* 1919.
7. LADD, G. T. and WOODWORTH, R. S. *Elements of Physiological Psychology*, New York, 1911.
8. NICE, MARGARET MORSE. The Development of a Child's Vocabulary in Relation to Environment. *Ped. Sem.* 1915, 22, 35-120.

9. —————, —————. Ambidexterity and Delayed Speech Development. *Ped. Sem.* 1918, 25, 141-162.
10. RAMSEY, W. R. *Care and Feeding of Infants and Children*. Philadelphia, 1916.
11. STARCH, DANIEL. *Educational Psychology*, New York, 1919.
12. TERMAN, LEWIS W. The Vocabulary Test as a Measure of Intelligence. *J. of Ed. Psych.* 1918, 9, 142-162.
13. —————, —————. An Experiment in Infant Education. *Journal of Applied Psychology*, 1918, 21, 219-228.
14. THORNDIKE, E. L. *Educational Psychology*, New York, 1913.
15. TRACY, FREDERIC, and STIMPFEL, JOSEPH. *The Psychology of Childhood*. Boston, 1909.

## THE MOTION PICTURE AS AN EDUCATIONAL ASSET.

By PHYLLIS BLANCHARD

Of late the motion picture, so long severely criticised as tending to encourage indolent mental habits and foster general immorality, has come into its own. When the United States entered the war it proved to be invaluable as a means of developing morale and bringing about the emotional unity of our heterogeneous nation. Now that the war is over, it bids fair to retain its place as an important method of social control, and its sphere of influence is steadily widening.

Many of the *post bellum* phases are simply an extension of wartime uses to include the General Public. For example such films as *How Life Begins* and *The End of The Road*, originated to supplement instruction in sex hygiene given by physicians at training camps, are now being presented in educational institutions and theatres. The first film, as its title indicates, is a series of pictures showing successive stages of cell division and embryonic development; following the approved method of the biological laboratory in the use of plant life and chick embryos, and reducing the whole subject to an impersonal and wholly scientific level. The second is a thorough exposition of the symptoms and far-reaching effects of gonorrhoeal or syphilitic infection, presented in connection with the stirring story of a Red Cross nurse and the great war. Its prophylactic value is obvious to anyone who has seen it, and it is especially to be commended in that it acts not only through fear but also through an appeal to the higher social motive of Eugenic responsibility. Many similar films are now being released, and will doubtless be quite as effective for the civilian community as the military cantonment.

Another wartime development of the motion picture which is being carried over into the reconstruction era are the industrial films which show each step of a process, from raw material to finished product. Many of these have been gotten out by various manufacturing corporations for advertising purposes, but this source does not take away any of the educational significance. The U. S. Department of Agriculture was not slow to realize the efficacy of such a scheme, and now has a catalogue of subjects of practical value to the farmer and

housewife, including such general divisions as animal and plant production, marketing efficiency, forestry, fruit and vegetable preserving, insect control, etc. Specific topics under each of these main headings may be illustrated by the following partial list: *Lumbering Yellow Pine in the Southwest; The Work of a Forest Ranger; What a Careless Hunter in the Woods Can Do; Coöperative Cow Testing in Vermont; Lambs from Range to Market; From Wool to Cloth; Construction of a Concrete Silo; Control of Hog Cholera; Preventing Spread of Gypsy and Brown-tail Moths; Control of Pink Bollworm of Cotton; Macadam Road Construction; Gravel Road Construction; Concrete Road Construction; Feeding the Hungry World; Drying Fruits and Vegetables in the Home.* Don Carlos Ellis, in charge of the motion picture branch of the Agricultural Department activities, says this work has been a vital factor in enabling the U. S. to feed the starving nations of Europe.<sup>1</sup> A nation-wide system of distribution for the films through the extension departments of state universities enabled scientific methods to be presented to men and women who could not have been reached otherwise, and it is planned to continue the work into peace times.

So successful has the industrial type of film become in this country, that it is proposed to extend its services to Europe as one way of assisting in the rehabilitation of devastated regions. The first step toward the realization of this project has been taken by Mrs. Myra Kingman Miller<sup>2</sup> who has organized a Foreign Film Unit of women to visit France, Russia, Italy and other countries, showing free of charge how problems of sanitation, hygiene, home building, public playgrounds, community houses for working girls, etc., are solved in the U. S. In fact, all material which can contribute to the social betterment of women and children will be used, and a full set of pictures of the child classics, as *Red Riding Hood, Cinderella, Snow White, The Three Bears, Alice in Wonderland*, will carry a gleam of happiness to the saddened orphanages of France.

With the cloud of Bolshevik uprisings darkening the far horizon, we have come to give serious thought to the task of the Americanization of our immigrant population. Recognizing the motion picture as a language of all tongues, the Federal Bureau of Naturalization has decided to use this medium in its classes for aliens all over the country. Two series are to be

<sup>1</sup> *Motion Pictures in Agricultural Education.* Educational Film Magazine, Jan-Feb., 1919. V. I: 1-2.

<sup>2</sup> *Motion Pictures to Revitalize Europe.* Educational Film Magazine, V. I: 2, Feb., 1919.

presented, the first showing the development of the nation and its industries, the second how naturalized citizens have succeeded in different lines of industry. Teachers will of course be on hand to explain, but it is expected that the pictures themselves will be an effective argument for good citizenship.

With government endorsement of the motion picture as a legitimate aid to education, the teaching profession has at last awakened to a realization of its possibilities. At the N. E. A. convention in Chicago last February, superintendents agreed on a campaign for the installation of the cinema as a regular institution in public schools and colleges,<sup>3</sup> while the new centralized school building at Mingo, Ohio, having constructed its auditorium with a view to using motion pictures, has not only found its "shows" the educational and social center of the rural community, but a good financial proposition for the school as well.<sup>4</sup>

We have recognized the historical information conveyed by such films as *A Son of Democracy*, which features episodes in the life of Abraham Lincoln, and scenes from the war zones which offer authentic portrayals of battlefields and weapons of destruction. We have also noted the ease with which geographical instruction is absorbed through the medium of a *Burton Holmes* travel incident like *The Ainu of Japan*, or an *Outing-Chester* film such as *Cameraring Through Africa*, or a *Bruce Scenic* like *Tales of the Tall Timber*. As for classes in literature, how could the customs described in the classics be more clearly impressed upon the student's memory than by motion pictures of *The Last Days of Pompeii*, *The Doll's House*, *Silas Marner*, *The Taming of The Shrew*, *The Bride of Lammermoor*, *The Man Without a Country*, *The Bluebird*, *The Vicar of Wakefield*, *Treasure Island*, *MacBeth*, *The Cricket on The Hearth*, *Les Miserables*, or a score of other productions dramatizing for the screen the best writings of accepted authors? More recently there have been efforts to put the cinema still further to use in the teaching of science, both pure and applied. Prof. Van Doren of Earlham College, Indiana, has planned a screen course to illustrate his lectures in general and industrial chemistry,<sup>5</sup> including such topics as the following: *Crystallization of a Supersaturated Solution*, *Electrolytic Production of Hypochlorites and Chlorates*, *Manufacture of Sulphuric Acid*, *Blast Furnace*, *Construction of the*

<sup>3</sup> Dolph Eastman. *Motion Pictures at The N. E. A. Meeting*. Educational Film Magazine. V. I: 3, March, 1919.

<sup>4</sup> B. A. Aughinbaugh. *Mingo School Plan*. Reel and Slide. V. I: 3. May-June, 1919

<sup>5</sup> *Screen Course in Chemistry* Reel and Slide. V. I: 3, May-June, 1919.

*Oxy-hydrogen Blow-pipe, Mining Kainite, etc.* Prof. H. F. Moore, of the University of Illinois, has succeeded in obtaining microscopic films of the minute changes in wrought iron crystals when the metal is subjected to alternate stresses.<sup>6</sup> But it is in the field of the biological sciences that the most extensive production of films has been accomplished, and it is here that the cinema promises to be of most value, because textbooks and charts can not show the movements characteristic of living creatures.

To teachers who have vainly attempted to induce a class of beginners to see the wonders revealed by the microscope, films showing amoeba, paramecium, rhizopod, vorticella, stentor, rotifera, and other micro-organisms, will be a welcome addition to laboratory equipment, and such a series has been partially prepared by the Argus Laboratories.<sup>7</sup> The Ditmar Studios have filmed *Sea Anemones*, *Turtles of All Lands*, *The Orang*, *Tree Animals*, *Mammals of Strange Form*, and many other zoological subjects, while Pathé offers an equally good list, comprising at least a dozen reels on *Bird Life*, several on *Reptiles*, and others on *Crustaceans*, *Coelenterates*, *Worms and Echinoderms*, *Mollusks*, *Monkeys*, etc. Geology and Botany are less amply provided for at present, but no doubt such films as *Ice and Snow*, *A Plant With Nerves*, and *The Pitcher Plant* will be followed by others of a similar nature.

From even such a brief and inadequate survey, it is obvious that the motion picture is well on the road to become an accepted educational asset. There is little doubt that its advent will be hailed with enthusiasm alike by progressive teachers and long-suffering pupils, because it will afford better pedagogical results at the same time that it makes memory an unconscious function instead of a labored effort involving all the agony of concentration on an uninteresting piece of work. That this principle might be carried too far, to the detriment of the habit of concentration when the work becomes important and requires it, is possible, but a wise use of the cinema as a supplement of textbooks and lecture courses, cannot but prove a necessary adjunct to the equipment of the school of the future.

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<sup>6</sup> E. F. Cone. *Motion Pictures of Mental Stresses*. Educational Film Magazine. V. I: 2, Feb., 1919.

<sup>7</sup> H. D. Ashton. *Life Cycle of Micro-organisms*. Reel and Slide. V. I: 3, May-June, 1919.

## SOME SUGGESTIVE PROBLEMS IN THE AMERICANIZATION OF MEXICANS

By Roy E. DICKERSON, General Secretary, Y. M. C. A., Tucson, Ariz.

When mention is made of the problems confronting the nation by reason of the presence of foreigners within our gates, the average American is accustomed to think at once about the heterogeneous mass of immigrants who come to us from the nations of Europe and Asia, but without accurate knowledge of that part of our country which borders upon Mexico, he is scarcely likely to give even passing thought to the Mexican immigrants, much less to appreciate how large and difficult a part of our Americanization problem these people constitute.

This failure in popular thought to include the Mexican among the immigrants may be due to the fact that comparatively few people have occasion to observe this class of immigrants, since the overwhelming majority of Mexicans who come to this country distribute themselves in those states along The International Boundary, known generally as the Great South West. The United States census for 1910 shows that nine-tenths of the then Mexican population was concentrated in the states of Arizona, Texas, California, and New Mexico. This limited distribution in itself gives rise to many problems which would not exist were these people more widely scattered and, in turn, accounts for the lack of understanding on the part of the ordinary citizen of any special needs or difficulties among the Mexicans. While the 1910 census places the Mexican population within the United States at some two hundred and twenty-five thousand, and subsequent figures give the number of immigrants between 1911 and 1917 as one hundred and eighteen thousand, it is felt by those informed on the subject that these figures do not represent accurately the Mexican population, and that instead of the three or four hundred thousand indicated by these reports the number of Mexicans in the Southwest alone must be at least twice that much.

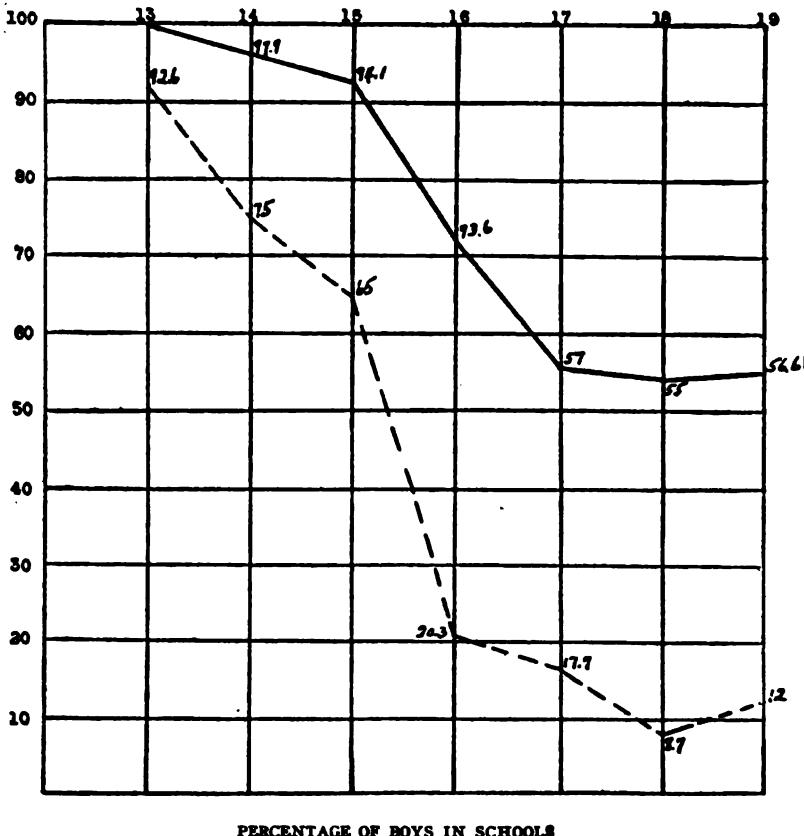
However inaccurate such estimates may be, it is certain that the Mexican population this side of and along the International Boundary is larger than the population on the other side. In El Paso alone it is conservatively estimated that not less than fifty per cent of its eighty-five thousand inhabitants

is Mexican. Such an estimate discloses a larger Mexican population in El Paso than in any city—American or Mexican—along the boundary excepting Monterey, Chihuahua itself, a purely Mexican city, having only a population of some thirty-five thousand. What is true of El Paso no doubt is also true of many other communities in the southwest of which the writer cannot speak authoritatively. His knowledge of conditions in one of the border cities is sufficient to enable him to venture some specific statements. These are derived from a survey of the 'teen-age boy-life of Tucson, Arizona, undertaken by the Young Men's Christian Association of that city, some details of which will be set forth in this paper.

Tucson is a city of some twenty-five thousand population, located about seventy-five miles north of the International Boundary, and on the main line of the Southern Pacific of Mexico Railroad. It is a modern, progressive and well-built city entirely American in spirit. Probably about fifty per cent of the population is Mexican. The presence of the proportionately large number of Mexican boys in the community indicated the need of a careful study of some of the sociological conditions among them before a program could be developed by the Association with any degree of confidence that it would be adapted to the needs of this class of boys. Accordingly the Young Men's Christian Association undertook to bring out by a survey the facts concerning the number of 'teen-age boys in the community, their nationality, the number in school and at work, the education of the working boy, and the nature of his work together with the amount of his earnings and something of his home conditions. The data for the survey were drawn chiefly from the school census made in the spring of 1918, supplemented by material from other sources and, in many instances, by special inquiry. Without going into details as to the technique of the survey, it will be sufficient to say that it is felt that the results accurately disclose the situation with respect to any of the matters inquired into. Before proceeding it must be noted that this article deals with the problems of only a portion of the Mexican population. Considerable numbers of this race are already well Americanized and are represented by many able, cultured and much respected men and women in all walks of life. What follows has no reference to them nor to any of the towns or cities in the country where long residence has brought about, as a whole, a domination of American habits and customs among the Mexican residents.

With regard to nationality, the survey disclosed the interesting fact that about sixty-two per cent of all the boys of

'teen age were of Mexican birth, and that at any one of the ages investigated the number of Mexican boys considerably exceeded the number of American boys of the same age. This ratio between the children of the two races is not uncharacteristic of other communities, no doubt due to the fact that the Mexican family, as compared with the American family, is much larger in size. In El Paso nearly seventy per cent of



the scholastic population of that city is said to be Mexican, and the school census of Tucson, as a whole, shows that about fifty-five per cent is of Mexican descent. It is interesting, in this connection, to note that in the year 1918 every sixth immigrant to the United States was a Mexican, and that nearly three thousand boys under sixteen years of age were admitted in that year, being the largest group of any one nationality.

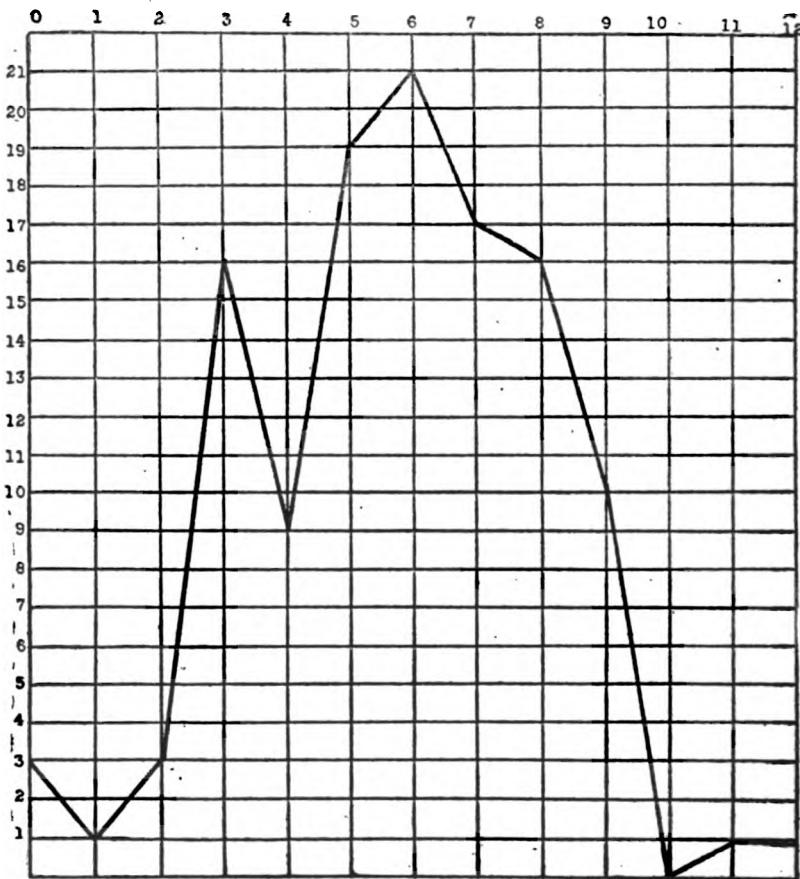
One of the most significant conditions disclosed by the survey was the relationship of these boys to the educational institutions of the city, both public and private. Taking the group as a whole, it was found that there was practically no difference between the number of Mexican boys of 'teen age in school and those of American extraction, though only forty-five per cent of the total boy population was in school; but upon analyzing the school attendance by years, it was discovered that this apparent equality in attendance at school was because of the large number enrolled at the ages of thirteen and fourteen. On a percentage basis the condition is shown by the following chart on which the solid line represents American boys and the dotted line Mexican boys.

It will be observed that the percentage of Mexican boys in school steadily and rapidly declines from ninety-two and six-tenths per cent at age thirteen to sixty-five per cent at age fifteen, following which there is a sheer drop of nearly forty-five per cent to twenty and three-tenths per cent at age sixteen. In interpretation of this it should be said that the laws of Arizona require the attendance of children at school until they are sixteen years of age unless the child has completed the elementary school before that age, in which event he may leave at fourteen. As a rule the Mexican boy is much retarded and few, if any, complete the eighth grade before sixteen years of age. When the pressure of the law is removed at sixteen years of age the result is graphically indicated by the dotted line. Leaving aside for the present any consideration of other factors contributing to this situation, the fact that less than twenty per cent of the boys of the upper 'teen age were in school is a serious matter from any point of view. Americans as a whole seem only recently to be anything like awakened to the importance of education as an Americanizing influence on any foreign people. When, as in this case, foreigners come to this country and establish settlements which are virtually small sections of foreign communities, speaking their own language, retaining their own customs, reading their own papers and to all intents and purposes maintaining their national life even in the midst of American forces and influences, the chief agency for bringing about an assimilation of such people must be American educational institutions, and, when we find more than eighty per cent of the boys of any foreign nationality outside of the sphere of influence of our schools, the situation becomes a matter of grave concern.

Another aspect of the same problem is illustrated by the following chart showing the highest grade in school completed by one hundred and seventeen Mexican working boys and repre-

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senting an accurate cross-section of the whole number of Mexican boys at work. The figures at the left indicate numbers, while those at the top represent grades.



HIGHEST GRADE IN SCHOOL COMPLETED BY 117 WORKING BOYS

This chart considers only numbers without distinctions of age. A supplementary chart, not shown here, analyzed the figures by ages. Taken together they disclosed that three of the group studied—two of them nineteen years old and one eighteen years old—had never gone to school at all. Sixteen boys had completed the third grade, part of them having received their education in Mexico. This group was distributed as follows: one, nineteen years old; six, eighteen years old—three of

whom had passed through the third grade in Mexico; three, seventeen years old; two, sixteen; three, fifteen and one, fourteen. As further illustrating this chart, consider the nineteen boys who had completed only the fifth grade. Of these one was nineteen years old and the balance were distributed as follows: six, age eighteen; two, age seventeen; three, age sixteen; two, age fifteen; four, age fourteen and one age thirteen. The median line on this chart will run somewhere between the fifth and sixth grade, thus corroborating the judgment of those familiar with conditions elsewhere, who estimate that Mexican boys generally quit school at the fifth grade.

Further information on this subject is given by the educational survey of Arizona made by the United States Bureau of Education in 1916-1917, and published as Bulletin 1917 #44. At page 120 of the Bulletin a table is given showing the number of children enrolled in each grade for every one hundred enrolled in the first grade in eleven of the principal cities of Arizona. A part of the data given is shown below:

	1st Grade	2nd Grade	3d Grade	4th Grade	5th Grade	6th Grade	7th Grade	8th Grade
Average of State	100	52	46	43	35	23	22	19
Average for Tucson	100	46	36	40	23	15	15	11
Average for 30 other cities	100	88	77	75	70	63	52	43

When studying this table the rapidly shifting population in Arizona together with the large numbers of Mexican boys dropping out of school must be considered since these two factors undoubtedly largely account for the low averages shown. Excessive retardation of Mexican children is also an important contributing cause. It is not uncommon to find boys of five or six years difference in age in the same grade, and the graded schools have many Mexican boys fifteen or sixteen years old in the same classes as American boys five or six years younger. The median variation disclosed by the government survey for twelve cities in Arizona ran from four years at the eighth grade to eight and one-half years at the first grade, it appearing entirely possible to find thirteen, fourteen, fifteen or sixteen-year-old Mexican children in the same grade as five- and six-year-old American children. Figures from the same source for this city show an average of twenty-seven per cent of children in the grades as three years or more

over age. The report itself says, "The over-age problem is greatest in the fifth grade and rapidly diminishes in the upper grades and high school. This is about the grade at which retarded children reach the compulsory age limit and drop out of school." No doubt this is one of the most potent reasons for such a decrease in attendance as shown by the first chart. As a whole the Mexican boy matures more rapidly than American boys and feels himself much out of sympathy with his younger classmates. Naturally enough the tendency is to leave, as soon as the law will permit, the school which thrusts him into such company. Before passing on to other features it should be noted that the figures given as the "average for 30 other cities" are derived from data collected outside of the State of Arizona and are given in the government bulletin to illustrate conditions in other places where immigrants do not enter into the situation. The figures for Tucson are lower than the average for the State partly because of the relatively larger number of Mexicans in that city as compared with other cities in the State.

Among other noteworthy factors are to be included economic pressure which makes it necessary for the boy to leave school and, in many instances, a real lack of stimulation from the home and other forces. Apparently neither the social heredity, the environment nor the influence of the home is sufficient to stimulate the boy to remain in school in anything like the same numbers as the American boy and, perhaps, herein lies the heart of the problem, the real task being that of creating or utilizing influences designed to evoke a greater response to educational opportunities. No doubt there are large numbers of Mexican boys who leave school for no sufficient cause and who might well continue their education if the home or other social agencies urged and encouraged them to do so, provided the school offers a curriculum adapted to their special needs.

Two other aspects from the sociological point of view remain to be mentioned. The surveys show an interesting and unexpected range of earning on the part of the working boy, running from thirty dollars a month at one extreme to one hundred and eighty dollars at the other. The overwhelming majority of boys working were earning between sixty dollars and one hundred and ten dollars per month while quite a few were making between one hundred and ten dollars and one hundred and eighty dollars a month. It probably is true that the range of wages for boys at the time this survey was made reflected the abnormally high scales maintained during the war and that a similar inquiry made at the present time would show a somewhat lower average, yet even if such prove to be the fact

the situation would be little if any the less interesting and full of social problems, especially when considered in connection with the just discussed educational background of these boys and the home conditions as disclosed by the investigation.

We have already mentioned the well-known tendency of the Mexican along with other foreign nationalities to establish settlements in this country in which the customs and habits of living prevalent in the home country are perpetuated. It is beyond the scope of this article to attempt discussion of the type of home maintained by the Mexican either in his native country or in the United States. It will be sufficient to say that as a rule immigrants congregate in small areas, densely settled, with more or less primitive habits of living and in an atmosphere almost wholly devoid of American influences. Illiteracy is widespread and a very large percentage are not able to speak or even to understand the English language. In addition to this general condition the survey disclosed that nineteen per cent of all the boys of 'teen age reported their fathers as being dead; six and one-half per cent made a similar report with respect to their mothers and three and four-tenths per cent were shown to be living away from home, making a total of twenty-eight and nine-tenths per cent of the boys at this most important age whose home life was, in a very vital respect, abnormal.

Some conception of the problems presented will be gained when one considers the situation as a whole, taking as typical of many of the entire group, some of the results disclosed in the survey. Here we have a community comprising a large part of the city in which it is situated, maintaining very largely the habits and customs of life in Mexico, speaking their own language, reading their own papers and unable, to a large extent, to understand or to speak English. In this community are considerable numbers of boys whose education has not gone beyond that of the fifth grade, eighty per cent of whom are not in school, large numbers of them earning much more money than is wholesome for any boy of 'teen age to have at his disposal, and living in homes frequently lacking the presence of either father or mother. In this connection also should be considered something of the racial and social characteristics of these people. They represent a race which long has been held under the pressure of conquest and political despotism. The boy reflects this pressure in his diffidence, by an inclination to be more retiring than the American boy, and in a temperamental lack of the buoyancy and optimism of our own youth. We are told by those familiar with national life in Mexico, that the play-life of the boy is very meagre.

There is an abundance of individual games but a great deficiency of those requiring team work and, as a whole, the Mexican boy considers himself too old to play when he has reached the age of sixteen. Such a boy has no fraternities, no sports, no visions, of social service, no one of the many activities which gain the interest and attention of the American youth—in short, he suffers from a paucity of things to do. The revolutions of recent years have driven many Mexicans of the finest class into this country, and these refugees constitute almost a separate problem in themselves. They have suddenly come out from an environment and a national life very different from our own into conditions far from favorable, in many instances, and find themselves completely at sea. Illustrative of this may be mentioned the cases of two boys now in this country, one of them formerly a student of law in Mexico, now unable to pursue his studies and serving as a janitor; the other formerly a student of medicine, now reduced to the necessity of working as a messenger boy. As this is being written an Associated Press Dispatch tells of a former rich and distinguished Mexican, one-time member of the Mexican Cabinet and a wearer of the French Legion of Honor, who for two years past has been making his living in a border city driving a "jitney bus."

Over against these limitations should be considered some of the characteristics as we have had occasion to observe them among the boys in this city. There is an unusual eagerness and desire for self-development—almost any opportunity that promises helpfulness is eagerly seized upon. There is a great deal of respect for authority and achievement which makes Mexican boys as a whole better disciplined and more readily controlled than the American boy. In addition there is a tremendous pride and sensitiveness which, unless understood and reckoned with, alienates the sympathy of the boy, quite imperceptibly at times, but very effectively.

Such are some of the aspects of this large problem. The whirligig of revolution has accentuated many of its phases and, at the same time, has opened to this country a rare opportunity by bringing within our boundaries and within reach of our schools and other Americanizing forces many boys of the finest families in Mexico now numbered among the refugees here, but who are refugees only, being on fire with love and enthusiasm for their own country. To it the overwhelming majority of them will return and because of their former position and superior education they will become in time the dominating and controlling minds in that country. If we are to have better international understanding of a permanent

nature between ourselves and this near neighbor in the south, we must take care that these boys and young men carry back with them an accurate conception of our spirit and that they shall have made that spirit an integral part of their own. And if we are to cope successfully with the Americanization of the large numbers who still remain in this country, the best efforts of our best citizenship must be given to these problems in a much more vigorous and effective way than has hitherto been manifested.

## THE HIGH PROFESSIONAL STANDARDS OF PRESENT DAY CITY SUPERINTENDENTS

By **CHARLES E. MCCORKLE**, Superintendent of City Schools, Ironton, Ohio

Most educators of the present day agree that education is a science. Not many years ago when Dr. Strayer made the statement and attempted to prove it, great discussions arose everywhere not only in education but in other fields. The idea of claiming education to be scientific was preposterous, especially with those people who were engaged in the so-called scientific fields.

The medical profession is an old and recognized profession. Many years ago medical men formed themselves into a highly professional group with a high professional code of morals which each man in the profession had to follow or be classed as an outlaw professionally. Very few doctors who practice medicine violate the now rather highly standardized code of ethics. This professionalism has become disseminated so widely that it is very poor business for any man to treat it lightly. Yet the practice of medicine is little if any older than the practice of teaching.

If any individual twenty-five years ago had said that as high a standard of professionalism existed in education as in medicine, he would have been called the biggest optimistic liar in existence. No doubt the individual would have been a perverter of truth, a dreamer of dreams, or else a prophet of the good days to come. Not many years ago, a goodly number of those who were engaged in the teaching profession could have been called outlaws, bandits, and other similar terms. Almost every person was after the job of any other person who had a better job than he had. Politics, friends, "pull," and even diabolical contrivances were concocted by some to eliminate others from the jobs which they cherished. This sort of procedure was common. But the spirit of professionalism has grown to such an extent within the last few years that unprofessionalism is as uncommon as it formerly was common.

During the last five years, the writer has noted greater advances of professionalism in the teaching profession than in any other profession. From the data that have been collected,

it is safe to say that no profession now has a higher, truer, more sincere, and self-sacrificing code of professional ethics than the teaching profession. However, the data to be discussed in this particular study have to do only with City Superintendents. Furthermore, at the time the data were collected, the writer firmly maintained that no such thing as a professional code of ethics existed among superintendents. It was held that if superintendents did have any professionalism, it only had to do with those things that do not pertain to holding jobs. If information was desired that would reflect upon their work, or give somebody else an opportunity to get the job which they held, it was thought that professionalism would vanish. Facts prove the opposite.

In 1914, while the writer was at Clark University, information was requested from 257 city superintendents regarding what America's attitude should be towards the World War and what place the War should have in the Public Schools of America. "Answers were received from one hundred and nine city superintendents, from the United States Commissioner of Education, and from twelve state commissioners of education. In these answers, thirty-nine different states are represented. The total population of all the cities from which replies were received is 18,138,965, in which the total number of teachers employed is approximately 60,000." (Published in *Pedagogical Seminary*, March, 1915, Vol. XXII, pp. 1-26.)

The writer, in commenting upon the 148 superintendents who did not reply and who were far from being as busy as they are now, stated: "There is no question that they feel they cannot run the risk of losing votes or becoming unpopular by speaking for or against this as their pedagogic training and ability demands. In a matter of such importance and far-reaching influence as this, surely the 'political game' must play an important rôle since it prevents a decided expression by a man in such an important position." (*Pedagogical Seminary*, same as above.)

In regard to the superintendents' replies to the above data, there was not a single unprofessional reply. However, from the above criticizing quotation, it is easy to see that the conception of the professionalism of City Superintendents was quite vague in the mind of the writer. And there is little doubt that he had a sufficient amount of experience to warrant him in making the statement. But his judgment, like the judgment of too many educators and supposed experts, was based upon personal experience and a limited observation, much of which might have been the exception rather than the rule.

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During the spring of 1915, the writer became interested in the great possibilities of Current Events Teaching in the public schools. (See *Pedagogical Seminary*, 1915: "How to Teach Current Events.") In this extensive study, every superintendent replied in a purely professional manner.

While at Harvard University in 1916, the writer made an extensive and comprehensive "Study of Superintendents' Reports." (This study is almost completed and will soon be in press). The object of this study is to show "What a City Superintendent's Report should Contain and How to Write It." More than ninety per cent of the Superintendents replied, and not a single unprofessional reply was received.

In 1917, while superintendent of City Schools at Ironton, Ohio, the writer made another small study which had to do with the salary schedules of forty-five cities in Ohio. Over ninety-five per cent of the superintendents responded. Because the study had to do with salary schedules, some pessimists might intimate that, naturally, questions about salaries would bring replies. Some folks might add that courteous as well as professional replies would be received when the subject of salaries is discussed. Whatever the cause was, every reply was strictly professional.

Some few weeks ago while looking through the data of the above investigations, the writer decided that a true professional spirit really prompted the superintendents to make painstaking replies. But it was also decided that these data would prove beneficial to the giver when collected, and that selfish motives could have prompted the replies. Therefore some other form of a test should be given to a representative number of superintendents in order that sufficient data might be had for determining the professional standards. Everybody will agree that courtesy, ethics, and almost everything else will be tested when the livelihood, job, and money phase of life are being questioned. Will professionalism in Education stand this test?

The following letter was sent to a goodly number of city superintendents in large and small cities just prior to their reelection,—

" Dear Supt. (\_\_\_\_\_) :—

" I am informed that you are going to retire from the Superintendency of your City Schools at the close of the present school-year. Through courtesy to you, and because of the high standards of our profession, I am writing to you for information. If the above information is correct, will you please send me the names of the members of your Board of Education by mail?

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"Thanking you in advance for any information that you may give to me, and wishing you the best, I am  
"Fraternally yours,"

The above letter was impertinent, but the replies that were received were, indeed, surprising. There was no indication in any of the replies that a study was being made, but every superintendent responded in the spirit of giving the proper information. Answers were received from more than ninety per cent of the superintendents, and practically all of the replies were made by return mail. Representative replies are as follows,—

"I am not expecting to resign my position as Superintendent of the \_\_\_\_\_ schools for the coming year. Of course, if the Board of Education should so decide, I may have to resign, but as matters are now I can see no reason for resigning.

"Thanking you for your professional courtesy in this matter, I am"

.....

"In reply to your letter received a few days ago, let me say that I was unanimously reelected \_\_\_\_\_ for a term of four years at an increase of \$1000 per annum.

"With kind regards, I am"

.....

"In reply to your letter \_\_\_\_\_, I desire to say that I have had no intention of leaving the \_\_\_\_\_ at the present time. The person who gave you the information must have had the wires crossed. With kind regards,"

.....

Between five and ten per cent of the superintendents had been displaced by a designing high school principal or an assistant superintendent. In some cases the change might have been made in a professional manner. However, not one single complaint was made by these big-hearted professional men. Representative letters of this nature are as follows,—

"\_\_\_\_\_ our high school principal was elected last night at a salary of \$4000. He had the inside from the first."

.....

"\_\_\_\_\_ Mr. \_\_\_\_\_ was elected and I am hunting a position. Good luck to you."

.....

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It is hoped that these newly made superintendents will soon catch the high professional code of honor that exists among our city superintendents. And the writer hopes just a little further, and that is, through the concerted action of city superintendents, not only unprofessional superintendents but unprofessional subordinates, i. e. assistant superintendents, principals, supervisors, and teachers be eliminated from the teaching profession just as rapidly as possible. It is perfectly all right for persons in subordinate positions to rise in the profession, but let that rising be in an honorable manner.

From the representative letters quoted above, it is evident that there were three groups of superintendents, those who expected to remain in their present position, those who had just been reelected, and those retiring from their present position through resignation or displacement. The replies that were received from each group were courteous and highly professional. Professionalism among city superintendents has a very bright future and a very high standard. This is indicated by the following letter,—

“Replying to your letter of the \_\_\_\_\_ would say that you were wrongly informed relative to my retirement \_\_\_\_\_. On Tuesday last I was unanimously reelected with a substantial increase in salary.

“I wish to thank you for the courteous manner in which you approach the situation. I am working on a committee to draft a code of professional ethics for our state, and it is a satisfaction to receive the wholesome impression that your letter of inquiry gave me. This is particularly true in the light of not a few illustrations of an opposite type that are falling into the hands of our committee.

“Wishing you continued success wherever your lot may be,—”

From all of the data that have been received during a period of over five years as designated in the previously mentioned studies, the facts show conclusively that there is a professionalism among City Superintendents that cannot be surpassed by any other profession. In fact, the writer challenges any profession to demonstrate by the claims of extensive data and facts a higher, a more sincere and self-sacrificing code of professional ethics than the present day City Superintendent maintains.

## BOOK REVIEWS

### SOME RECENT LITERATURE ON THE CHILD

*The Child's Unconscious Mind.* By WILFRID LAY. N. Y., Dodd, Mead & Co., 1919. 329 p.

*The Play Way.* By H. CALDWELL COOK. N. Y., Stokes, 1917. 367 p.

*A Study of the Mental Life of the Child.* By DR. H. VON HUG-HELLMUTH. Washington. Nervous and Mental Diseases Pub. Co., 1919. 154 p.

*Das Proletarische Kind.* By DR. ROBERT TSCHUDI. Zurich. Art Institut Orell, Füssli, 1919. 36 p.

Dr. Lay's book is quite frankly an attempt to apply Freudian psychology to the problems of education. The first chapters are an excellent summary of the psycho-analytic principles of the unconscious and the mental mechanisms and psychic complexes which in large measure determine human conduct. The later chapters show how these psychological factors enter into the reactions of the school child and become powerful motives toward good or bad behavior, intellectual interests, relations with teachers and playmates, etc. It is pointed out that we need a new pedagogical type in our schools,—a group of teachers sufficiently well versed in the new psychology and with small enough classes to permit of analytic study of individual children, in order to discover and remedy the unconscious obstacles which obstruct the proper development of the intellectual life and social nature. The aim of education in the future will not be confined to training in the subjects of an approved curriculum; it will rather broaden its scope to include the adjustment of the child to reality and the development of a sane and healthy attitude toward the problems of life.

Although Dr. Lay's book contains little original material, it is by far the most inclusive and practical attempt to apply the psycho-analytic findings to pedagogical situations. As always, the author has succeeded in expressing technical points with a simplicity and clearness which makes his work preëminently fitted for the use of students previously unacquainted with the subject, hence its desirability for the use of the average school teacher. There is one criticism which seems only fair, however. Dr. Lay, while not overemphasizing the sexual factor in human conduct, takes little note of the egoistic tendencies pointed out by Adler, and entirely neglects the important contributions of the Zurich school, as represented by Jung and Maeder, to the understanding of personality. It may justly be suggested that the logical next step in a psycho-analytic scheme of pedagogy would be the application of the point of view developed by these latter investigators in the same manner as Dr. Lay has so adequately adapted the Freudian findings to the educational field.

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If such authors as Hayward and Knowlson are correct in their insistence upon the crying need of society for originality, and in their condemnation of present educational methods as destructive of spon-

taneity, then H. Caldwell Cook's volume entitled *The Play Way* could not be more timely or of more far-reaching import. It is difficult to do it full justice in a brief review, for it is packed full from cover to cover with entertaining and instructive material. In general, it is an account of the author's work with the boys of his form, whose ages range from 11 to 13 years, but the methods described might be applied with equal success to classes of girls, or to mixed classes, in spite of Mr. Cook's modest avowal that he is incompetent to speak other than of boys.

Perhaps the two most original things which Mr. Cook has done are described in the chapters headed *Littleman Lectures*, and *Ilonds*. The former gives an account of an innovation in the conducting of oral composition classes, while the latter shows the constructive imagination of the child given free play. Finding his boys falling into stereotyped expressions in their extemporaneous speeches, Mr. Cook took them out into the playground, and began a series of stump orations for and against equal suffrage, home rule, and other absorbing topics. Soon the boys had taken the initiative, and were arranging lectures upon aeroplanes, fishing, submarines, and other subjects dear to the youthful heart. The samples submitted at the end of the chapter fully justify their master's disregard of pedagogical traditions of discipline in allowing the pupils to follow their own inclinations and interests. The "Ilonds" are illustrations, half map, half picture, of ballads and prose compositions written by the boys. Mr. Cook protests that they are quite unoriginal, because *Robinson Crusoe*, *Treasure Island*, and a score of other juvenile tales have long since made islands a classic theme of childhood. But after all, what is genius except the use of familiar materials in an unique manner? And "Mixed Grill Ilond," which is one of the many fine illustrations in Mr. Cook's book, with its bedevilled Hell whence repentant souls are blown to the Heaven of apple tart makers through an exhaust pipe, is a creation worthy of Rossetti in his classic diagram of Dante's *Inferno*.

The building of miniature "Playtowns," the acting of Shakespearean plays leading over into dramatic authorship, miming and ballad presentation etc., are less startling contributions to pedagogical thought, but like the other chapters, are rich in suggestions for the resourceful teacher. Indeed, there is no question at all as to the enduring value of Mr. Cook's contribution to educational methods, the real problem is to find teachers in whom the spirit of make believe is yet alive, so that they possess sufficient insight and adaptability to be able to do things "the play way."

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In her *Study of the Mental Life of the Child*, although she has collected a great many new illustrations, Dr. Von Hug-Hellmuth has not advanced beyond the Freudian studies of infantile eroticism. Indeed, her whole description of the child's psychic life and activities may be adequately epitomized in the one term "sexuality." That enuresis, erethic sucking, masturbatory activities, etc., are characteristic of the first years of childhood almost any student who approaches the subject with the psycho-analytic viewpoint will admit, but to insist on the libidinous nature of pure muscular movement, or the invariable existence of a sexual *Angst* in fear, would indicate the clinging to a preconceived idea in the face of every logical process of reasoning. Dr. Hug-Hellmuth fails entirely to offer conclusive proof that the spontaneous movements of infants are not merely an expression of the *elan vital*, the energy which animates all living organisms, and of

which the sexual impulse is necessarily only one manifestation. Nor does she go beyond the Freudian assumptions that certain animals are in every instance an erotic symbol, to substantiate her statement that the dreams in which children repeat terrifying experiences of being chased by bulls or other ferocious beasts always have an underlying sex motif. It can be quite as plausibly maintained that fear is equally with sex one of the great instinctive forces governing human life, and that of itself it offers a sufficient explanation of such dream occurrences as the author cites in support of her position.

A good example of the far-fetched type of reasoning which Dr. Hug-Hellmuth employs is shown in the following extract: "There is a better basis than simple superstition for the popular belief that those children are of an especially erotic nature whose mothers during pregnancy have continued sexual intercourse until near delivery . . . it may be induced through purely physical influences resulting from the shakings of the mother's uterus, a source of stimulation in which a variety of muscle and skin sensations take their rise that have a certain effect long before the infant has reached complete maturity." There is little necessity for such an elaborate theory in face of the obvious fact that such a type of mother must herself be possessed of an exceedingly erotic temperament, which in accordance with the laws of heredity would be transmitted to her offspring in the very germ-plasm of the ovarian cell itself.

In short, Dr. Hug-Hellmuth's monograph, while an excellent presentation of the extreme Freudian viewpoint, must be read critically, and not accepted as the final word in psycho-analysis. Dr. Putnam and Miss Stevens have rendered the work into clear-out, forceful English, and deserve much credit for the tactful handling which they have given to a theme which cannot but have more or less repelling qualities to the average reader.

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There could be no more touching plea for the children of the poor, no more vivid picture of the social revolutionist in the making, than Dr. Tschudi's simple recital of the answers given by school children in answer to the following questions: "What is your greatest wish? What is your deepest joy? What work do you like best besides school tasks? What do you do with your pocket money? What would you do if you had a thousand francs? What would you do if you were rich? What would be the noblest thing you could do? Why is stealing forbidden?"

What do they wish for, these little ones who live on the streets or in crowded tenements,—dolls, candy, toys? Some do, to be sure, but the vast majority answer that they want a dress "because this one is too small," or a bed "in which I may sleep alone," or that "mother need no longer go out washing and cleaning." And in what simple pleasures they rejoice,—"When I can play with the neighbor's cat, then I am happy. My mother will not permit me to have one, but I take the neighbor's cat in my arms and play with it." But most of them find their greatest joy in play with brothers and sisters, or with the father when he does not return too tired from his work. And so the pitiful tale runs on, telling of selling papers for money to help a weary mother or of unskilful hands preparing the evening meal, so that father and mother have only to sit down to supper when they come home from work; of saving pocket money against sickness or in order to learn a trade wherewith to earn the daily bread; of the pretty clothes and the

good things to eat a thousand francs would buy,—always for the whole family, never for self alone; of the many poor people to be made happy "if I were rich." Finally we come to the proletarian child's idea of the noblest deed a person can do,—there is no doubt in the mind of any one of them. To loose the fetters which bind his parents, to free them from toil and care, to bring a little pleasure into their weary lives,—that is the ideal to which the child of the slums yearns with all his heart and soul. Truly they are strangely unselfish, these babies of the working class. And they have been imbued with the traditional moral teaching, too. "Every child knows that stealing is forbidden," they say naively. But they add a significant sentence to this statement: "Only in time of dire need, when one is starving, then it is permissible to steal," or "When a rich employer will not give his workers enough to live on, then it is right to steal from him." Taught thus in those early impressionable years, Dr. Tschudi concludes, why should they not heed these tenets later on, when the aftermath of war brings upon the proletariat an economic desperation which renders him hopeless? It is not so easy to find an answer to this pertinent question, and when one has read these words which fall so innocently from the lips of little children, he will be more apt to see the revolutionary movement in all its human feeling, not merely as a problem to be solved by the cold logic of economic doctrine.

PHYLLIS BLANCHARD.

*New Schools for Old. The Regeneration of The Porter School.* By EVELYN DEWEY. N. Y., Dutton, 1919. 337 p.

Those of us who look back to a childhood on the farm with occasional attendance at the "district schoolhouse" will recognize a familiar picture in the dilapidated, one-room building which was the original center of learning at Porter, Missouri. But we will rub our eyes at the vision of that same school under the able leadership of Mrs. Harvey, with its modern sanitary equipment and its position as social center of the community. In fact, Mrs. Harvey has gone into Porter and put into practice all the theories which our professors of rural sociology labor to instill into the minds of their students. Persuading the men of the district to donate their labor, she achieved a thoroughly repaired, furnace-heated schoolroom in place of the forlorn shack with broken windows and door swinging loose from the hinges. Better yet, this very coöperative effort became the germ of a community spirit and neighborliness which evolved into men's and women's clubs, to say nothing of less organized but equally important institutions which have removed the traditional isolation of the farmer's life. From the first humble effort for a better school far-reaching results have thus been attained. From school gardens to university extension courses on agricultural methods was a surprisingly short step. From interest in things musical as represented by an ancient organ and a cheap phonograph the way was clear to a young people's band now in demand at all county functions. And in the final result there has been a complete regeneration of the social, economic, and moral life of the community.

All these metamorphoses Miss Dewey has described in the following chapters: The Country Life Movement; The Little Red School-House To-day; How Porter Found a Solution of the School Problem; The Story of The New Porter School; The Growth of the Community; The Social Life of the School; Ethics and the Social School; The School and the Economic Interests of Porter; The School Program and

Organization; Agriculture and the Curriculum; The Place of Reading and Writing in the Curriculum; Education for Democracy. The book has an undoubted practical significance in that it outlines the treatment of concrete situations and the methods of overcoming difficulties which must be encountered in any attempt to apply the teachings of students of rural problems.

PHYLLIS BLANCHARD.

*Algumas Notas Pedagogicas* (1916), *Mutilados da Guerra* (1918), and other pedagogical pamphlets. By FERNANDO PALYART PINTO FERREIRA. Lisboa, Casa Portuguesa.

In these monographs, Senor Ferreira, the Portuguese minister of education, sets forth briefly his ideas concerning the teaching of drawing, arts, and crafts work, and the general pedagogical methods for primary education. He also reviews the work done in France for professional re-education of wounded soldiers. *Some Pedagogical Notes* shows an intimate knowledge of the new movements in pedagogy, and a familiarity with the educators of other countries,—Dewey, Montessori, Sloyd, and others,—and emphasizes the author's desire to introduce more extensive courses in manual training, drawing, and general science into the elementary school curriculum, voicing at the same time an approval of school museums, entomological collections, etc. The other pamphlets treat of these subjects individually, in their various aspects.

It is the account of the French reeducational work that most interests us at the present time. It is described under the following chapter headings: Functional reeducation; Estimation of natural aptitudes; Selection of a profession; Professions; Artificial limbs; Value of the stump of the amputated limb; Education of injured left hand; General education; School for reeducation at Bordeaux; School for reeducation at Paris; School at Lyons; Psychological school; Morale of wounded; Condition of the wounded; Blind and deaf; Conclusions. The French professional reeducation has centered on agriculture, manufacture of toys, photography, carpentry and locksmith's trade, agricultural machinery. The different schools have well-equipped work-shops, and offer extensive courses in commercial as well as industrial education. The psychological school trains those who are to act as vocational guides, etc., for the wounded soldiers. All the schools have ample resources, Senor Ferreira concludes, and are inspiring places to visit, so fine are the results they are accomplishing. His book is only the barest outline of the work that he inspected, as his entire report covers only 57 pages, but the appendix contains some very interesting photographs, and the broad scope of the reeducational undertakings of France is brought vividly home to the reader.

PHYLLIS BLANCHARD.

## BOOK NOTES

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*The Intelligence of School Children.* By LEWIS M. TERMAN. Boston, Houghton Mifflin, 1919. 317 p.

This is one of the Riverside Textbooks in Education edited by Professor Cubberley of Leland Stanford Junior University. In his Introduction the editor tells us that this book was written primarily for the grade teacher and as an introduction to the author's "The Measurement of Intelligence." Its greatest usefulness, it is said, would probably be for Teacher Study Clubs and State Reading Circles, or as an introductory textbook for students in normal schools, etc. "A careful study of it by the teachers of a city or State would contribute wonderfully to the intelligent handling of children, and the study of it by prospective teachers would open up entirely new conceptions as to educational procedure, and would lead to a far more satisfactory direction of the exceptional children found in every school." The author in his Preface tells us the book was written for the rank and file of teachers, supervisors, etc., and his purpose is to illustrate the large individual difference in original endowment. It does not treat the psychological principles underlying intelligence tests.

The chief topics are: Some Principles of Intelligence Testing; Amount and Significance of Individual Differences; Individual Differences among Kindergarten Children; Individual Differences in the First Grade; Individual Differences in the Fifth Grade; Individual Differences in the First Year of High School; The Mental-Age Standard for Grading; Mental Tests of Laggards; Case Studies of Forty-one Superior Children; Intelligence Tests in Vocational Guidance; and Practical Suggestions for the Use of Mental Tests.

*The Aims of Teaching in Jewish Schools.* By RABBI LOUIS GROSSMANN. (With an Introduction by G. STANLEY HALL.) Cincinnati, Teachers' Institute of the Hebrew Union College, 1919. 245 p.

We have here a very interesting and important presentation of the Jewish idea of education grade by grade, from the first to the eighth inclusive. We are then told of the proper relation between the public and religious school, the teacher and the community, the Hebrew language, the picture in the religious school, children's services, music in the religious school, and charity collections and charitableness. The author is well acquainted with the various studies of childhood that have been made and also has a keen sympathetic feeling for childhood. This gives his book a vital touch.

*Comparative Education.* Ed. by PETER SANDIFORD. N. Y., Dutton, 1918. 500 p.

This is a book worth having. Since the outbreak of the war comparative thought has been tremendously stimulated. Especially have the systems of England and Germany been contrasted. In this volume W. F. Russell of the University of Iowa writes of the system of the United States; I. L. Kandel of Columbia of that of Germany; A. H. Hope of Greenwich, England, of that of France; H. W. Foght, of the

Bureau of Education, on Denmark; and the editor, on the systems of England and Canada.

The above commendation of the book was written before it had been read. The after-impression is somewhat different. In the first place, it has no right to the word "comparative," for there is nothing comparative in it. We have simply presentations of six systems, themselves of very unequal merit and treated with still more diversity of gift. Denmark is represented by the United States Bureau's expert in Rural Education, and Germany by the Carnegie Specialist in Education. Worst of all, the expectation one naturally has in reading a book issued in 1918 that war and post-war conditions will be considered, is also grievously disappointed. Very much of the material is of the calibre and method represented in most of the Bureau of Education's reports on educational systems of foreign countries. A better title for this book would have been "A Compilation Describing the Educational System of Four Great Countries, One Small One, and a Province."

*The Gary Schools.* Publ. by GENERAL EDUCATION BOARD OF NEW YORK CITY. 1918.

At the request of the Board of Education and the City Superintendent of Gary, a survey of the Gary system was made by the General Education Board of New York City and resulted in the following eight booklets, which are rather copiously illustrated and describe fully, perhaps too fully, each of the following aspects:

*The Gary Schools: A General Account.* By Abraham Flexner and Frank P. Bachman. 265 p.

*Organization and Administration.* By George D. Strayer and F. P. Bachman. 126 p.

*Costs.* By F. P. Bachman and Ralph Bowman.

*Industrial Work.* By Charles R. Richards. 204 p.

*Household Arts.* By Eva W. White. 49 p.

*Physical Training and Play.* By Lee F. Hamner. 35 p.

*Science Teaching.* By Otis W. Caldwell. 125 p.

*Measurement of Classroom Products.* By Stuart A. Courtis.

The Board announces that, in view of the widespread professional interest in this survey, they will send any of the above listed volumes free on application.

*Letters to Teachers.* By HARTLEY B. ALEXANDER. Chicago, Open Court, 1919. 253 p.

These letters are journalistic, propaganda written during the war and here reprinted. They were directed to the internal rather than the external condition of our nation. Most of the letters are on general topics, but there are a few that are grouped under Foreign Language Study, Community Pageantry, Education in Taste, Education and Democracy. They were originally addressed to the people of Nebraska, although they deal with both local and national problems. They discuss such topics as the School and the Commonwealth, The Curriculum, The Humanities, The Life of Youth, The School System, The Teacher's Profession, and The Ballot.

These letters are very general, and the attitude seems to be that of a philosopher who assumes that from the height of general abstract principles he can decide concrete questions in a rather *a priori* way. The author ignores the fact that one result of the war has been to make "goody" generalizations about education obsolete. Teachers now want to know specific facts about the soul of the child, what the needs and trends are in the community, and how to adapt the two with

the least loss of efficiency; and those who are up to this question will find little to aid them in this book. The time has come when education should cease to be the tumbling ground of metaphysicians, theorists, and moral speculators of any kind.

*Education and Citizenship and Other Papers.* By EDWARD KIDDER GRAHAM. New York, Putnam, 1919. 253 p.

The purpose of this volume is to bring together the more notable addresses of the late president of the University of North Carolina, who died last October in his forty-third year. The twenty-five papers are arranged in four groups, as follows: (1) Education and Democracy, (2) Culture and Citizenship, (3) Student and College Relations, and (4) Occasional Papers. The attitude taken on the great questions he discusses is thoroughly sane and progressive, and shows a very competent mind with a firm grasp on the larger problems of education. The death of the man is indeed an untimely loss in this period of reconstruction.

*What the War Teaches About Education.* By ERNEST C. MOORE. N. Y., The MacMillan Co., 1919. 334 p.

The war has been the proving stage of two colossal experiments in education. The first, which began forty years ago in Germany when her autocratic government initiated the plan of subjection to the world, is the most remarkable demonstration of the power of teaching in the history of man. The second is the colossal undertaking of the United States, profiting by the failures and successes of France and England, in training and equipping a large army within a twelve-month, transporting two million men across the seas, and conquering Germany.

The main topics treated here are: Contemporary Ideals; The Child in Modern Society; Is the Stress Now Put on Practical Instruction Versus Idealistic Training Good?; Why We Must Go Slowly; General Discipline; Arithmetic and Mathematics; Formal Discipline; What Is History and Why We Want It; What the War Teachers About Education. A number of these articles are addresses or papers published in various educational journals. The book strikes a high note, but it often sags and lacks the unity that the title suggests.

The PEDAGOGICAL SEMINARY is asked to announce the existence of the "Bureau Central de Documentation Scientifique sur les Ecoles Nouvelles" under the guidance of Dr. Adolphe Ferrière. The aim of the *Bureau* is to act as a clearing house for the educational movement represented by the "New Schools" (see *Ped. Sem.*, Dec., 1918). Dr. Ferrière is at the head of one of these schools at Pleiades sur Blonay in Switzerland, is professor of child psychology and pedagogy at the *Institut Rousseau*, and doctor in Sociology. He would be grateful if the readers of the PEDAGOGICAL SEMINARY would send him publications upon new theories or practice of child education.





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## THE OPTIMUM HUMIDITY FOR MENTAL WORK

By WILLIAM H. BURNHAM, Clark University

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Most people have only a vague idea of the hygienic significance of humidity in the air of the home or the schoolroom. Much of the recent literature on the subject is likely to leave one with confused or erroneous ideas.

On the one hand are those who apparently have found the key to human happiness and efficiency in an optimum humidity. On the other hand are those who generalizing hastily from the investigations of the New York Commission on Ventilation conclude that apart from unusual conditions the humidity in the air of a schoolroom is of minor importance.

An ardent representative of the former class is Mr. Watt who has discussed at length the relation of humidity to health; and on the basis of his observations in the Graham School in Chicago condemns the dry atmosphere of the ordinary schoolroom and insists in the most emphatic language upon the need of a proper degree of moisture. In a personal letter a few years ago he wrote:

"We have humidified the air in all regular rooms and reduced the temperature to 62 with everyone comfortable and enthusiastic over it. This is the greatest thing in education at this minute. The hot dry air of ordinary schools makes catarrh, pneumonia, tuberculosis, grippe, dyspepsia, general debility, headache and torpor. By injecting steam into the tempered air chamber we lower the danger of colds and make the teachers who formerly were chilly in 70 satisfied with 62. More than satisfied."

Watt apparently would make a lack of humidity responsible in large degree for the moral and mental defects of humanity in general. In his book he has chapters on "American dry rot," "The steam heated woman," "Dryness as a cause in falling off in church attendance." Of his own experience in Chicago he says:

"We avoid hundreds of daily headaches, we cure stupidity, we permit clearness of thought, we have cut down the number of cases of office discipline more than 75% since we turned on the steam." (13)

On the other hand the New York Commission (10) from studies of the physiological condition and ability to do intellectual work as gauged by standard psychological tests under varying conditions of humidity, reported no appreciable results. The subjects of this experiment, it is reported, worked naturally and they were no less efficient and showed no poorer control under the excessively dry conditions than under the more favorable conditions. The subjects did not feel uncomfortable, and there seems to have been no real physiological disturbance, because the tests of pulse and temperature gave negative results.

Between these extremes are conflicting reports of many observations of the effects of different conditions of humidity. Obviously it is desirable that further investigations be made. Meanwhile it seems possible to come to closer quarters with the problem and to get a clearer view of the significance of the known facts.

The problems of temperature and of humidity are inseparably connected. Air, using the word as we usually do, always contains a certain amount of moisture. It seldom contains all it can hold. When it does it is said to be saturated. Speaking from a more strictly scientific point of view, Dr. Wilson says:

"The expression, 'capacity of air for moisture' is misleading. A better expression is, capacity of space or vapor for moisture, because the presence of air in space has nothing whatever to do with the capacity of the space for moisture, the only effect of the presence of air being to retard the diffusion of moisture within the space." (*Science*, 1911, p. 152.)

Absolute and relative humidity are distinguished. The absolute humidity is the amount of moisture actually contained in a given space or atmosphere. The relative humidity is the ratio of this actual humidity to the possible humidity at saturation for the given temperature and pressure; and it is reckoned in the percentage which the absolute humidity is of

the total possible humidity. That is, an atmosphere of a given temperature would contain 100 parts of water at the saturation point. We find it does contain 75 parts, then it has a relative humidity of 75%. The warmer the air, the greater the amount of moisture it can hold; hence for a given percentage of relative humidity, the warmer the air the greater is the amount of moisture it contains, or the greater the absolute humidity. Thus the relation of the relative humidity to the temperature is an important one, and absolute humidity as well as relative humidity has hygienic significance.

To understand the hygienic significance of the humidity of the air, it is necessary to keep in mind that the primary need for ventilation is to remove superfluous heat from the body. Recent investigations have emphasized this. In the now familiar experiments of Paul in Flügge's laboratory, while he remained for four hours breathing the same air over and over again when the temperature and humidity were low, with the temperature above 70° F. and the humidity above 72%, serious symptoms appeared and he was on the verge of collapse in 15 minutes. When in this condition he put his head out of the cabinet and breathed fresh air it did him no good, since an increase of the body temperature was apparently the cause of the symptoms. In the high temperature of some schoolrooms and public halls, as suggested by the experiments by Paul, probably an abnormal increase of the body temperature, what Paul called *Wärmetauung*, occurs. The serious effects of this were demonstrated by Paul's experiments, and ordinary observation shows the same. Where people are crowded into an enclosed space, fainting not infrequently occurs, and this is apparently often due to the abnormal increase of the body temperature. In such cases what happens is probably this:—The increased temperature produces an increase in metabolism and the oxygen supply is not equal to the demand; hence the disastrous results. (2, p. 57).

Lee (8a) has brought together a large number of facts bearing on the effect of increased temperature and increased humidity, and forms the following conclusion:—"From these various observational and experimental data it may be inferred, if not with certainty at least with a high degree of probability, that the subjection of a body to an external temperature and humidity sufficient to raise the internal temperature to a pathological degree causes metabolic changes, the nature of which is not yet known, but which interfere profoundly with the normal working of internal mechanisms."

Lee also recalled the fact that Alexander von Humboldt more than 100 years ago observed that heat increased the

action of various chemical substances on certain forms of living matter such as the heart and the motor nerves. Many investigators have studied this and it is recognized as a general law that at a higher temperature the action of poisons is more intense. It has been suggested that this law applies to the effect of fatigue toxins. Patrizi suggests that this is the reason for the great susceptibility of the human muscles to fatigue when subjected to hot baths. In the case of excessive temperature and humidity we have the fatigue toxins as well as an overheated body, and in proportion as the internal temperature rises the toxicity of the fatigue substance is more and more increased.

Huntington has given a similar explanation of the effects of excessive temperature. He says:

"Physiologists are not yet fully agreed as to the cause of the phenomena shown . . . although there is little doubt as to the general facts that they imply. One hypothesis may be briefly stated. According to Pütter's summary, the most probable explanation is that activity goes on increasing according to the ordinary chemical law until it becomes so great that the organism is not capable of absorbing the necessary oxygen. That is, at a low temperature the creature easily gets what oxygen it needs, and gives it out again in the form of carbon dioxide or of other oxidized products which remove the waste substances from the body. As the temperature rises, the normal increase in chemical activity takes place, the animal is still able to get rid of all its waste products, and thus its life processes are strengthened. With a further rise of temperature a change sets in. The chemical processes which break down the tissues of the body become still more active, but the supply of waste products to be eliminated by oxidation becomes so great that they cannot all be removed. This is because in every organism there is a distinct limit to the amount of oxygen which the creature can mechanically convey to different portions within a specified time. If the supply of oxygen is not sufficient to oxidize all the waste products, some of these will remain in the system. They act as poisons. Their first effect is to diminish the organism's activity. If they accumulate to too great an extent death ensues." (7, p. 107.)

What happens in such extremes of temperature and humidity suggests the point of view for considering ventilation. Dr. Lee sums up the facts, as he sees them, as follows:<sup>1</sup> "When an individual is subjected to an atmosphere that is charged with an excessively high temperature and high humidity, his bodily temperature is raised, his working power

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<sup>1</sup> *Am. Jour. of Public Health*, 1912, p. 870.

becomes limited, and there is an early oncoming of fatigue. In addition to the normal fatigue substances there are present other substances, products of an abnormal metabolism, perhaps of increased protein disintegration, which likewise act as fatigue substances. Both the normal and the pathological fatigue substances act toxically to diminish the activity of the tissues, and such fatiguing action is rendered greater by reason of the abnormally high internal temperature that is present."

Thus we see the serious results that occur when the temperature of the body is raised above normal, when there is a storing up of heat in the body, as in Paul's experiments in the glass cabinet. Nature has a very elaborate mechanism for maintaining the body at normal temperature. When there is excess of heat the blood is rushed to the surface and cooled. When one is cold, the blood is withdrawn from the surface and heat is conserved. As Sherrington has put it:

"The temperature of the blood as a whole will depend on how large a fraction of it is cooled by streaming through the skin. The regulation of that quantity is a main means of regulating the deep temperature. It is common experience that we flush after entering a warm room. That is, the blood-vessels of the skin dilate. A larger portion of the total blood streams through the cool skin-zone of the body; the escape of heat from the body is more free; this counteracts the tendency for the internal temperature to rise in the warm surrounding. The skin becomes warmer but the internal temperature remains unaltered, or often is a little lowered from over-compensation."

Thus it is vitally essential that the superfluous heat be eliminated from the body. The success or the failure of the body in accomplishing this purpose depends as well on the humidity of the external air as on its temperature as will be apparent from a little consideration.

The humidity of the air has two opposite effects. The first effect of increased moisture in the air is to increase the conductivity of the air for heat and thus to favor the transfer of heat from the body to the air. This is a cooling influence. The other effect of moisture in the air is to check the evaporation of moisture from the body, and thus to check the elimination of heat from the body. This we may refer to as an important heating influence. Whether the moisture in the air serves to cool the body or to heat the body depends on the relation of these two different effects of humidity. At a temperature below 60°, since under ordinary conditions of rest there is practically no perspiration, the dominant if not the exclusive effect of humidity in the air is to increase the conductivity of the air

for heat and hence to cool the body. Above 70° the dominant effect of moisture in the air is likely to be the heating effect decreasing the evaporation. This more than offsets the effect of the increased conductivity of moist air, hence it tends to heat the body.

The greater absolute humidity for a given relative humidity at the higher temperature is also an important factor in relation to respiration; but the relation between the cooling influence by conduction and the heating influence from the checking of evaporation seems to be the prime factor. As Professor Hough says:<sup>2</sup>

"Humidity influences the output of heat from the body in two very different ways: It increases the conductivity of the atmosphere for heat—a cooling influence; and it interferes with the evaporation of perspiration—a heating influence. What the net result will be depends on which of these influences of humidity is predominant. Below 70° the second, or heating, effect drops out, because so little perspiration is then secreted, and a high degree of moisture chills the skin, as shown by the familiar effect of an east wind in winter along our northern Atlantic coast. Above 70°, on the other hand, because conduction is slower, it becomes necessary to evaporate perspiration and at these temperatures humidity heats the skin. Between these lower and higher ranges of temperature, there is a neutral region at which high humidity has comparatively little effect. This region is about 68 or 70°. We have only to appeal to our own experience to see that high humidity chills the body at 65°, while it is hardly noticeable (in the absence of muscular activity) at 70°."

But in another important way the humidity of the atmosphere affects the elimination of heat from the body, namely, by its effect upon the amount of moisture eliminated by the lungs. Normally in an ordinary atmosphere the body throws off a large amount of heat from the lungs in respiration. The importance of the absolute humidity in relation to health depends upon the fact that it conditions the amount of moisture taken from the body in the process of respiration. Harris and Benedict<sup>3</sup> estimate that under the conditions of their experiments with human subjects at rest, 10% of the total heat is lost by evaporation of water from the lungs while 12.3% is lost by evaporation from the skin. Air taken into the lungs contains varying amounts of moisture depending upon the temperature and humidity of the atmosphere. The amount of moisture taken from the body in the

<sup>2</sup> *Amer. Jour. of Public Health*, 1910, p. 268.

<sup>3</sup> *A Biometric Study of Basal Metabolism*, p. 197.

processes of respiration equals the amount given off by the lungs in expiration minus the amount taken into the lungs by inspiration. That is, if the air is cold and dry, as in this climate usually in the winter, little moisture is inhaled and a relatively large amount of moisture is given off from the lungs. If the air is hot and humid, very little moisture is eliminated from the lungs.

In other words, the moisture taken from the lungs is equal to the difference between the absolute humidity of the air inspired and that of the air expired. If the absolute humidity of the air breathed is low, a large amount of moisture is taken from the body in the process of respiration. If the absolute humidity is high, little is taken from the body.

With a moderate temperature and humidity an adult gives off from the lungs, according to Rubner, in one hour:

Rest . . . . .	17g
Deep breathing . . . . .	19g
Reading . . . . .	28g
Singing . . . . .	34g

In case of an individual for whom these figures represent the facts the amount taken from the body is this amount minus whatever is inspired.

With an atmosphere nearly saturated and a moderately high temperature, say 80°, the amount of moisture taken from the lungs is correspondingly reduced, and such an atmosphere is oppressive. A person ill with fever in a hot muggy day can be greatly relieved by letting him breathe air that has been forced through a large piece of ice by an electric fan. By this means the temperature of the air is reduced far below the point of precipitation and the absolute humidity correspondingly reduced.

Other conditions being constant, upon the *relative humidity* depends the amount of moisture evaporated from the skin. Hence this is an important factor in determining the temperature of the body. With a temperature of 85°F., for example, and a relative humidity of 90%, the body is surrounded as it were with a steam jacket and it is hard for it to rid itself of its superfluous heat. Thus Paul in his experiments with the glass cabinet found, as already noted, that with a temperature of 60°F., if the humidity was not more than 47% to 72%, he could remain for hours in the cabinet without discomfort; but with a humidity of 72% to 92% and a temperature of 68° to 86°, serious symptoms appeared in 15 minutes. But there was another interesting feature of this experiment; when on the verge of collapse, he started an electric fan, and the disagree-

able symptoms disappeared; for this stirred up the air and increased the evaporation from the body. (2, p. 57.)

Thus the absolute necessity of eliminating the superfluous heat from the body and the need of a suitable humidity of the atmosphere in order to favor the regulation of the body temperature give us the primary reasons for ventilation. In spite of all our lack of knowledge in regard to the problems of expired air there is apparently a practical consensus on this point as regards ventilation. The following is a good example of the opinions held.

Professor C. E. A. Winslow writes: "The chief factors for air conditioning for the living machine, *which in most cases far outweigh all other factors put together* are the temperature and humidity of the air." And again he says: "The sensations experienced in a badly ventilated room and the serious effects which such a room exerts upon health and efficiency are primarily due to the warmth and stagnation of the air and to its high humidity." (14, p. 828.)

Thus humidity is an essential point to be considered in ventilation. Ordinarily the air of inhabited rooms must be changed to keep the humidity at an optimum. To determine the optimum humidity for intellectual work is not an easy task. The chief factor to be considered is probably the effect on metabolism, appearing temporarily as comfort, permanently in an effect on health.

Several investigations have been made to determine "sensible" humidity. These indicate that the variations within the limits of comfort are rather wide. Rubner (12) made experiments with a man in the respiration chamber for the purpose of solving this problem. The general results were as follows: At low temperature, 14-15C. (52 to 59F.), dry air is more agreeable than moist. Between 24° and 29°C. (75 to 84 F.) dry air appears cooler than moist. High temperatures are not uncomfortable if the air is very dry. Visible sweat begins at 29C. (84F.) with a relative humidity of 22%. A relative humidity of 96% with a temperature of 24C. (75F) is unendurable for any length of time.

Observation too, shows that many persons are uncomfortable in a dry atmosphere. Lack of humidity is supposed by many to produce nervousness. If we pass beyond the mere question of comfort we have little direct evidence of what constitutes the optimum. But from our present point of view of the physiological significance of humidity in the air we may consider some of the important investigations.

Huntington (7, p. 85) studied the relation of the humidity to the efficiency of factory workers. He found efficiency at

a minimum in January and July and at a maximum in May and November. He notes that a sharp distinction should be made between the humidity of the outside air and that indoors. In his own study he did not find that humidity was responsible for fluctuations except as it was influenced by temperature. The inside humidity he thinks is an important factor in causing the low efficiency of mid-winter; but the average humidity of the outside air from season to season does not, he thinks, vary in such a way as to cause maxima in May and November, and minima in January and July.

Huntington reported that in spring and fall with temperature ranges from freezing to 70° with an average of 50° the best work is performed with a relative humidity of 75%. Neither the wet days nor the dry days are the best. A hot damp day, as everybody knows, is debilitating. The majority of the dampest days in summer are comparatively cool and the coolness counteracts the humidity and efficiency increases, hence Huntington concluded that with an average temperature of 65° a relative humidity of about 60% is desirable, and he says: "The most unmistakable feature of the curves as a whole is that they show a diminution of work in very dry weather." (7, p. 87).

Bearing still more directly on our problem are the investigations of the New York Commission on Ventilation. In their earlier tests the Commission studied the effect of humidity only incidentally; but no influence appeared. The general result as reported by Prof. Palmer was as follows: (9, p. 56)

"The effect of air conditions on mental proficiency was observed by giving the subjects standard psychological tests, such as adding columns of figures, mental multiplication, naming opposites of words, typewriting and cancelling numbers. The average scores in these various tests were found to be about equal regardless of the temperature or the absence of ample ventilation. Even a hot moist room, 86 degrees, which caused profuse perspiration and very positive discomfort, failed to lower the standard of efficient work. The scores fell off perceptibly, however, in the hot room, when the subjects were allowed to work or not as they pleased. No such change was noted when the air supply was reduced to a minimum. In fact, the average result of daily votes in one series indicated a greater degree of comfort with no air supplied at all than on the days with ample ventilation. The room temperature in both cases was kept at 68°."

The investigations by the New York Commission were made upon over a hundred different subjects, men and women,

working for periods approximating a day or half a day of ordinary factory work under carefully controlled atmospheric conditions in specially constructed experimental rooms at the College of the City of New York. Physical and mental tasks of various kinds were given and careful physiological and psychological observations of the bodily condition and the efficiency in both mental and physical work were made. As Dr. Winslow sums up the results: (14, p. 829)

"These experiments showed that stale rebreathed air containing 20 parts or more of carbon dioxid and all the organic and other substances commonly present in such air had no harmful effect on any of the physiological conditions studied, nor on the power or inclination to do mental or physical work, nor even on the comfort of the subjects as indicated by their average vote,—provided the temperature was not allowed to rise as it would generally do in such a room under ordinary conditions. There was, however, a slight but distinct diminution in the appetite for food in the stale air."

"The power to do either mental or physical work when concentrating for a short period under a strong stimulus was not diminished in these experiments even by the extreme condition of 30° C. (86° F.) with 80 per cent relative humidity. This coincides with practical experience, for we are all aware that heat, unless very extreme, is no hindrance to absorbing intellectual work and no bar to a good game of tennis."

"On the other hand warm air, whether stale or fresh, produced distinct and clearly marked physiological reactions. At a temperature of 24° C. (75° F.) with 50 per cent relative humidity the rectal body temperature was 2° C. higher and at a temperature of 30° C. (86° F.) with 80 per cent relative humidity, it was .5° C. higher than at 20° C. (68° F.) with 50 per cent relative humidity. The reclining pulse rate was 5 beats higher and the standing pulse rate 12 beats higher at 24° C. (75° F.) the reclining pulse rate 8 beats higher and the standing pulse rate 17 beats higher at 30° C. (86° F.) than 20° C. (68° F.)."

In the special investigation of the effects of humidity tests were made of addition, aiming, hand steadiness, tapping, type-writing, arm steadiness, mirror tracing, industrial fatigue, reflex wink, and eyelid tremor. The tests were made twice or three times a day with a temperature of 75° F. and 50% of relative humidity and 75° F. and 20% relative humidity.

By these tests of nervous and motor control, and by the more strictly intellectual tests no influence of excessive dryness during the two weeks' exposure, or during the working day could be detected.

Classes also were arranged at each end of the building, those at one end having a dry air, those at the other, a moist air. That is, in the words of the report, "Several classes at one end of a floor were subjected to moist atmosphere, and classes at the other end to naturally dry air." The pupils in these classes were of the same grade of mentality and physical and social status. (10, p. 14)

The physical condition of the children and the percentage of attendance showed no difference in the two groups of rooms. And on the basis of similar mental tests the experimenters concluded that no appreciable difference was found.

The experimenters did not conclude from these results that ventilation is an unimportant matter. Dr. Stecher writes in closing her monograph as follows: (10)

"Still, our finding that individuals put under certain controlled conditions react or fail to react in certain ways is by no means to be taken as sanction for all sorts of uncomfortable ventilation conditions. It must be remembered that in isolating the factor of humidity, we did not attempt to reproduce the conditions that go to make up a crowded, ill-smelling and excessively hot room. The very fact that the method of ventilating the experimental chamber produced a normal amount of air movement tended to alleviate the discomfort that would ordinarily be felt in a closed room under a 75°, 20 per cent condition."

It should be noted that these experiments give results which apply of course only within the range of humidity tested, and for the length of time the experiment was continued and the other conditions of the investigation. They tested low humidity, that is, of 20% as compared with what was deemed an optimum humidity, namely 50%. Further experiments are especially desirable to test an optimum humidity of 50% compared with a high humidity, say of 85 or above and also with a higher temperature, say a temperature of 75° such as is often found in schoolrooms and offices.

These experiments conducted by the New York Commission and reported by Miss Stecher were carried out with great care to control conditions, to give suitable instructions, to make the mental conditions favorable by arousing interest and the right attitudes in the subjects. They did not, however, concern all the important psychological factors involved. Especially is this true as regards suggestion. It would seem especially desirable that further investigation should be made with the special aim of determining the influence of this distinctly psychological factor in conditions where changes of humidity are concerned.

That many people are specially susceptible to suggestion from air conditions is shown by many observations and by the reports of many students. Note especially the comfort which many persons take from having a bowl of water or the like on the radiator in a hot room, and further, the very beneficial results reported by many from the use of some of the patent devices for moistening the air. That these favorable

results are due to suggestion rather than to the water evaporated is indicated in the first place by such experiments as those of Professor Loveland which showed that the ordinary radiator pan or vessels of water placed about the room change the humidity of the air only a fraction of 1%.

The observations made by Watt (13) and other enthusiasts cannot be doubted. But the psychologist naturally inquires if the good results of increased humidity reported were not in part due to suggestion. With the enthusiasm of their teacher the students in Watt's school would probably do better work when he, as he says, "turned on the steam," whether this were done literally or figuratively.

In their earlier tests the New York Commission studied the effect of morbidity only incidentally, but no appreciable effect of changes in humidity were observed.

The results found by the Commission should be considered in connection with such studies of the health of school children as those made by Dr. Josephine Baker (1) in the New York schools, who found an enormous increase in respiratory disorders in mechanically ventilated schoolrooms as compared with the open-window naturally ventilated rooms. The chief defect of the investigations of the New York Commission as described in these preliminary reports appears to be that they have not yet extended their study to the deeper effects of variations in air conditions on metabolism and the permanent health of the workers. That these deeper effects are the significant ones for hygiene is indicated not only, as we have seen, by the physiological effects of excessive heat and humidity, but is also suggested by the significant statement of the Commission that a loss of appetite was noted among their workers in unfavorable air conditions.

The outstanding facts emphasized by recent investigations are the following:

(1) The effect of bad air upon health and efficiency is due to physical conditions of heat, humidity, and lack of cutaneous stimulation rather than to chemical or bacteriological factors. The outcome of many recent investigations is to emphasize this point.

(2) The stagnant air in unventilated rooms apparently exerts an influence upon health and efficiency. In such an atmosphere there is a lack of normal cutaneous and nervous stimulation; and apparently, as indicated by the health of patients in hospitals and pupils in public schools, the health as well as the comfort of the occupants of rooms with stagnant air is distinctly affected. Moving air from open window

ventilation or even from the presence of an electric fan is distinctly beneficial, providing a healthful stimulus.

(3) Recent investigations, especially experiments carried on by the New York Commission on Ventilation, indicate surprisingly little effect upon the ability to do mental work from lack of ventilation. While excess of temperature affects the physiological functions, as already noted, the ability to do mental work seems to be practically as great with excess of humidity, and even of temperature, under the conditions of the experiments performed by them. The unfortunate results of bad air, apart from the direct physiological effects of overheating seem to be due largely to the mental attitude, distraction, and in case of many persons, the great discomfort, caused by suggestion, association, or conditioned reflexes, that occur under such conditions. In other words, the mental factor likely to be present in badly ventilated rooms seems to be much more important than is ordinarily supposed.

(4) The recent investigations corroborate and emphasize what has long been known, that the  $\text{CO}_2$  and other poisonous chemical substances present in bad air have little if any appreciable effect.

(5) In order to get to close quarters with the effects of bad ventilation, further studies should be made of the deeper physiological effects upon metabolism and the general health, especially from continuous work in bad air conditions.

#### PRACTICAL SUGGESTIONS

While we do not know very accurately about the matter, there is good reason to believe that a low humidity as well as a high humidity are both injurious to the health. The schoolroom problem is not a simple one. Besides the weather conditions and the heating and ventilating we have to consider the children as heat and moisture producing organisms.

Selter<sup>4</sup> assumes that an increase of humidity due to the children in a schoolroom cannot be avoided. One school child gives off per hour about 20 gr., an adult about 60 gr. of water in the form of watery vapor. This would amount in case of 50 children and a teacher to 1060 gr. or 5 gr. per cubic meter of the schoolroom. If we assume a temperature of  $18^{\circ}\text{C}$ . and a humidity of 50% at the beginning of the instruction then the moisture would rise at the end of the hour to 83% on the supposition that the temperature remains constant at  $18^{\circ}$ . If one would use the humidity as a gauge for reckoning the amount of air to be added, then in the case of cold outdoor air one would need to add only a very little air by ventilation in

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<sup>4</sup> *Handbuch*, p. 92.

order to keep the humidity from going above 60%, but in case of a high external temperature one would need to add very much air by ventilation. For example in case of an outdoor temperature of 5°C. and 80% of humidity changing the air once would be enough. In case of an outdoor temperature of 12° and 80% of humidity one would need to change the air twice; with an external temperature of 14° sufficient air could not be added to keep the humidity below 60%.

Selter's figures represent at most only one situation, but they illustrate a factor in the problem often neglected.

In regard to this whole matter, also, it should be remembered that an optimum humidity is merely one among many essential conditions; and great care may well be taken in statements concerning the humidity of the air in a schoolroom. The humidity is an essential factor in determining the optimum temperature; suitable temperature and humidity are inseparably connected as the primary ends of ventilation; and all the factors involved in the problem should be considered.

In the present condition of our knowledge it appears that with too dry an atmosphere injury is done to the throats and noses of some at least of the children; that in hot weather too moist an atmosphere checks the normal evaporation and elimination of heat from the body and is depressing. Until further studies have been made, schoolroom air with a temperature of 68° F. to 70° F. should have a relative humidity of 45 to 60%. A temperature of 65 to 68 with a humidity of 50 to 60% would probably be better.

Practical schemes for increasing the humidity of the air of schoolrooms are apt to fail because few people realize the great quantity of water that must be added to the air of a room when it is dry in order to produce an optimum humidity. This is well illustrated by experiments cited by Dr. Bruner.

"A few years ago some careful experiments on humidifying air were made by Professor Loveland at the University of Nebraska. These covered thirty days. Two seven-room houses, alike in construction and each heated by a hot-air furnace of the same make, were selected for experimentation. It was found that to raise the relative humidity of one 10 per cent above the other, as indicated by the hygrometer—i. e., from 20% to 30%—it was necessary to evaporate sixty-four gallons of water daily. It was further demonstrated that the ordinary furnace or radiator pan, or vessels of water placed about rooms, affect the humidity so little that it is not registered by the hygrometer. . . Most persons will testify to feeling a considerable difference in the character of the air as a result

of such evaporating devices, but the difference is unquestionably psychological rather than physical."<sup>5</sup>

To show the amount of moisture necessary to keep the air of a large building at a relative humidity of 50% in dry weather, Dr. Bruner gives the following example:

"The air in the American Bell Telephone building at Boston is kept at a relative humidity of 50% by injecting into the entering hot-air current a jet of steam; 675 gallons of water (twenty-two barrels) in the form of steam is required for this purpose every ten hours."

Many practical experiments in schoolrooms have shown that in the northern parts of this country in the winter months the air is apt to be very dry, and that pupils are comfortable at a lower temperature than the usual standard of 70° F. if the humidity can be increased. An interesting example of these studies may be cited.

Professor Brown<sup>6</sup> of the Worcester Normal School made tests a few years ago in various rooms in that building, and he reported as follows:

"Last year a jet of steam was turned into the ventilating shaft of the Normal School building and by regulating the supply the humidity of the main hall was raised to between 50 and 60 per cent. The increase of water vapor thus obtained allowed us to live in a temperature of from 64 to 66 degrees in comfort. On one or two occasions the curious condition resulted that the hall, perhaps moistened to the point of enervation, seemed comfortable at 61 degrees when a recitation room in which no moisture entered was reported cold at 65 degrees."

The condition of the atmosphere in most school rooms in this part of the country during the winter season is very dry. Mr. Brown says, comparing them to a desert:

"Now when we consider that the dry region of Asia, the Trans-Caspian Desert, has a range of humidity from nineteen to forty-five per cent; in Africa, Tripoli has a humidity of thirty-three per cent in August; and the Kufra Oasis, Sahara, twenty-seven per cent; Lahore, India, thirty-three per cent; and in our own country the dry Death Valley, California, has for five months a mean of twenty-three per cent, and Pueblo, Colorado, a mean annually of forty-six per cent, we realize that a schoolroom at thirty-seven per cent is not better than a desert."

On the other hand, we may perhaps from the results thus far obtained conclude that the actual ability to do mental work in such processes as adding is not materially decreased during a short period by working in an unduly high temperature and high humidity; but the amount of work done under ordinary conditions, where the subjects are prone to give way to their feelings; that is, the work done under ordinary school-

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<sup>5</sup> Bruner, Proc. N. E. A., 1911, p. 894-5.

<sup>6</sup> Worcester Bulletin, Nov. 16, 1912.

room conditions, is likely to be greatly decreased by a temperature and humidity that vary considerably from the optimum.

While the results of experiments seem to show no effect of dryness of the atmosphere down to 20% humidity on the amount of work that can be done, there does seem to be, on the other hand, a good deal of evidence that such conditions of the air create discomfort, and especially is it true at the other extreme, that great discomfort is caused by extreme humidity. Most people are so governed by their feelings that this discomfort is likely under ordinary conditions to decrease one's efficiency for work, however true it may be that under laboratory conditions one may be able to do as much work as usual.

Whatever the possibilities of doing a normal amount of work under adverse air conditions, in the ordinary work of the school it is desirable that children should be comfortable; and there are plenty of opportunities for developing will power and a wholesome attitude of meeting difficulties without resorting to an excess of temperature or of humidity. It is desirable that the developing brain of the child, the most marvelous and most complicated machine of which we have any knowledge, should do its work at least with conditions that do not tend to distraction. The habits of work formed under such conditions are better than those formed where the mental work is done with discomfort. Again in the practical work of the school, when discipline goes wrong and children misbehave or become nervous, the teacher should seek for the cause, and one of the first things to do is to look at the thermometer and note the other air conditions. It is usually better to improve the discipline by letting in fresh air than by the use of sarcasm or the rod.

At first sight it is difficult to understand why some people are so seriously affected by excess of humidity in the atmosphere. The sticky humid days of midsummer are disagreeable to anyone; but in case of some individuals they are the cause of much lassitude and depression. Probably some children form conditioned reflexes to a humid atmosphere as a conditioned stimulus. If this occurs we have a natural explanation of the idiosyncrasies of certain nervous people to the weather. The way such reflexes might be formed is obvious.

Suppose a child happens to have a slight physical disorder, indigestion, headache or the like, on a muggy humid day. The indigestion is the cause of the headache and other uncomfortable symptoms. Naturally enough in case of nervous children a single experience of this kind might be enough to cause the association of the humid weather with the indigestion as a conditioned stimulus; and in case of normal children,

if this experience happened two or three times, the weather condition might naturally become associated with the indigestion, so that thereafter when such humid weather occurred, even without the indigestion, the same physical symptoms of depression, headache and the like might occur as conditioned reflexes.

Probably, however, the excess of temperature does to a certain degree affect the brain directly by causing changes in metabolism. The experiments by the New York Commission strongly suggest that excess of temperature or the bad odors of stale air, or both these together modify the general metabolism, since, as we have seen, these investigators found that by working in bad air and overheated conditions the appetite of their subjects was diminished. Thus, while for the time being no appreciable effect on the working ability was noticed, probably continued work in these conditions would be injurious to the health and decrease the efficiency.

The reason, then, that changes in temperature and humidity have an effect on the mental activity would seem to be three-fold: first, because excess of temperature and humidity affects the general metabolism, and along with this the metabolism of the brain; second, the excess of temperature causes discomfort, distraction of attention, and the like; third, the idiosyncrasies of some individuals apparently make them especially susceptible to weather conditions, by suggestion, the forming of conditioned reflexes, or the like.

#### CONCLUSIONS

The main points in regard to humidity may be summed up briefly as follows:

1. The higher the temperature the greater the amount of moisture that a given atmosphere or a given space can contain.
2. What constitutes an optimum humidity depends upon the temperature.
3. Absolute and relative humidity are to be distinguished. The absolute humidity is the actual amount of moisture contained in a given space or atmosphere, the relative humidity is the ratio of this actual amount of moisture contained in a given space to the possible amount that can be contained at the saturation point, and this is usually stated in per cent.
4. The absolute humidity is an important factor in determining the elimination of heat from the body in the process of respiration, because the amount of moisture taken from the lungs is equal to the amount expired minus what is inspired at the given temperature and humidity.

5. The relative humidity is important for health because it also is an important factor in determining the elimination of heat from the body.

6. The humidity in the atmosphere has two different effects. For example, an increase in the humidity increases the conductivity of the air for heat and thus favors the transfer of heat from the body—a cooling effect. On the other hand an increase in the humidity decreases the evaporation from the body, which is of course a heating effect. The actual effect of the humidity of the air at any given moment will depend on the relation of these two factors. This fact explains many of the puzzles in regard to humidity.

7. In this part of the country the air in most schoolrooms in the winter is usually too dry.

8. Observation seems to have shown also that injurious effects upon the mucous membrane of the throat and respiratory tract result from continued breathing of an extremely dry atmosphere, and that such conditions may cause inflammation and irritation of the throat and bronchial tubes. The question of causal relation here, however, has not been adequately studied.

9. A very high humidity with a low temperature makes one chilly. With a high temperature it is oppressive. With a temperature even of 80° and 100% of humidity it seems almost intolerable.

10. Probably there is an optimum humidity for the best physiological condition and for efficient mental work, although this probably ranges within rather wide limits.

There is no consensus in regard to the optimum humidity. Rubner, who has studied the matter for years, advises: At 20 C, 30% — 60%; Uffelmann, 40% — 75%. In this country we may well adopt a relative humidity varying from 45% — 65% as representing the optimum. The range of comfort is very wide, perhaps from 45% — 75%.

11. The organism apparently has great power of adaptability to changes in the temperature and humidity of the air.

12. Changes in humidity are likely to have an exaggerated effect upon some individuals on account of suggestion.

13. It should be kept in mind that the special significance of an optimum humidity comes from its connection with the conditions of temperature. The investigations by the New York Commission concern merely humidity with what may be considered a fairly optimum temperature.

14. Although the experimental evidence is small, it seems clear that an optimum humidity is an important condition of efficient brain activity.

15. Until further investigations are made, the optimum humidity for a schoolroom with a temperature of 68 to 70° would seem to be a relative humidity of 45 to 60%.

16. The experimental evidence, especially that furnished by the experiments of Lehmann and Pedersen, indicates that there may be optima for different occupations.

17. Most of the devices for humidifying the air of a separate room are of little value because they supply too little moisture.

#### BIBLIOGRAPHY

For additional references see the bibliography given under number 2.

1. BAKER, S. JOSEPHINE. Classroom ventilation and respiratory diseases among school children. *Amer. Jour. of Public Health*, 1918, Vol. 8, p. 19-26.
2. BURNHAM, WILLIAM H. The optimum temperature for mental work. *Pedagogical Seminary*, 1917, Vol. 24, p. 53-71.
3. FRÖHLICH, F. W. Leistungen der Nervensystems und seine Beziehungen zur Unterrichtshygiene. In Selter's *Handbuch der deutschen Schulhygiene*. Dresden, Steinkopff, 1914, p. 134-173.
4. HILL, L. E., FLACK, M., MCINTOSH, R. A., ROWLAND, R., and WALKER, H. B. The influence of the atmosphere on our health and comfort in confined and crowded places. Washington, Smithsonian Inst., 1913, 96 p.
5. HOUBLER, B. R. The effect of temperature, humidity, air movement, and barometric pressure on the blood pressure, pulse, and respiration of children under the influence of various forms of ventilation. *Proc. Congress of Hygiene and Demography*, Washington, 1913, Vol. 3, p. 116-130.
6. HOUGH, THEODORE. The primary purpose of ventilation, to facilitate the maintenance of the constant temperature of the body. *Proc. 4th Int. Cong. on School Hygiene*, Buffalo, 1913, Vol. 2, p. 248-255.
7. HUNTINGTON, E. Civilization and climate. New Haven, Yale Univ. Press, 1915, 333 p.
- 7a. HUNTINGTON, E. Temperature optima for human energy. *Proc. Nat. Academy of Science*, 1917, Vol. 3, p. 127-130.
8. LEE, F. S. Recent progress in our knowledge of the physiological action of atmospheric conditions. *Science*, 1916, Vol. 44, p. 183-190.
- 8a. LEE, F. S. The effects of temperature and humidity on fatigue. *Proc. 15th Inter. Cong. on Hygiene and Demography*, Washington, 1913, Vol. 3, p. 504-512.
9. PALMER, G. T. The part played by temperature in schoolroom ventilation. *School and Society*, 1915, Vol. 2, p. 55-58.
10. STECHER, L. I. The effect of humidity on nervousness and general efficiency. *Archives of Psychology*, 1916, No. 38, 94 p.
11. THORNDIKE, E. L. and KRUSE, P. J. Humidification of a schoolroom and the progress of pupils. *School and Society*, 1917, Vol. 5, p. 657-660.
12. TITCHENER, E. B. Psychophysics of climate. *Amer. Jour. of Psychology*, 1919, Vol. 30, p. 1-14.
13. WATT, W. E. Humidity and scholarship in school. *Amer. Physical Educ. Rev.*, November, 1910, p. 600.
14. WINSLOW, C. E. A. The effect of atmospheric conditions upon fatigue and efficiency. *Amer. Jour. of Public Health*, 1917, p. 827-834.

## RELATION OF INITIAL ABILITY TO THE EXTENT OF IMPROVEMENT IN CERTAIN MATHE- MATICAL TRAITS

By FRANK McGINLEY PHILLIPS, Ph. D., George Washington University

### INTRODUCTION

The purpose of this study is to determine whether initial ability in certain traits has any relation to the extent of improvement an individual may make after he has had a period of training and practice.

An attempt is made to answer the following questions.

1. How is initial ability related to the extent of improvement an individual may make during a practice period?

2. Is it possible to approximate the level of attainment a group should reach after a prescribed amount of training; that is, is it possible to foretell how much improvement a group should make if given a stated amount of training for a stated period of time?

3. Do any limits appear in the amount of improvement that may be made under class training?

The writer became interested in this problem while supervising grade work in the public schools. In making use of the various tests, standard and otherwise, in checking the results of teaching in arithmetic, it became obvious that the various groups tested were making gains of different amounts. Within a group, it was noticed that individuals differed in the amount of improvement made. The question arose, "What pupils make the greatest gains? Is there a certain type of pupil upon whom training and practice have an especially marked effect?" An attempt to answer these questions from educational literature is at present impossible as only a few brief studies bearing upon these questions have been published. Opinions are rife, but these do not agree among themselves. They vary all the way from the confident assertion that improvement will vary directly with the amount of initial ability, to the equally confident assertion that the reverse is true. Some of this divergence is no doubt due to the fact that the term 'initial ability' is used in a varying sense.

In this study, initial ability is understood to refer to the amount of work of a specific type that an individual is able to do in a given time, such measure being made at the beginning of a practice period. This ability is a complex of native

ability and training, but no attempt was made to seek a measure of these factors independent of each other.

#### STUDIES MADE

In this investigation five studies were made as follows:

1. Study of abilities among children of the 4th and of the 5th grades of the public schools in two figure additions, and in two figure multiplications.

2. Study of the abilities of pupils in the four fundamentals of arithmetic, and in copying figures, in the 5th, 6th, 7th, and 8th grades of a private school system.

3. Study of abilities among children of the 6th, 7th, and 8th grades of a public school system in the fundamentals of arithmetic and in problems in reasoning.

4. Study of the abilities of college freshmen in college algebra.

5. Study of the abilities in the four fundamental operations of arithmetic among grade children of the 4th, 5th, 6th, 7th, and 8th grades of a public school system.

These studies were all made under different circumstances and are reported separately. Each is complete in itself, and is an observation upon the subject under investigation. Each adds a bit of testimony in answer to the questions stated on page 330. It was the purpose of the writer to approach these questions from several angles, and note the results, and if possible draw conclusions.

The general plan adopted in the investigation was to test rather thoroughly the group under consideration in particular traits, and then, after a period of study and practice and drill, to follow with a similar test and note the progress made during the interval.

After the first test in each study, an array was made of the measures obtained, rated according to the several abilities of the pupils, ranging from the best to the poorest. The measure or score used was the number of correct exercises completed during the time of the test.

For the purpose of study, this array was divided at its middle point into two groups. The gains made by these groups were then compared. The gain for each group was obtained by taking the average score made by the group in the first test, and subtracting that from the average score made by the same group in the later test. In most cases, as a further check upon the effect of initial ability, the array was divided into three groups of about equal size, and a study made which compares the progress of the three groups.

It must be understood that this division was made only of

the results obtained, and as far as the pupils themselves were concerned, no such divisions existed at any time. The pupils did not know whether they were in the upper division or the lower division, or that any division existed.

It might be questioned whether the slow pupil gets the same amount of practice in a given time as does the one who works more rapidly, but as far as the time element is concerned, and as far as presenting the instruction is concerned, each pupil had the same opportunity and the same amount of teaching.

#### STUDY I

##### *Tests in Addition and in Multiplication*

Sixty-one pupils of the fourth and the fifth grades of the Caledonia, Minnesota, Public Schools were given tests in addition and in multiplication of two figure combinations selected by chance. In selecting these combinations, six sets of numbers, from 0 to 9, were placed in a box and were drawn out by two's. The combination was recorded and a second draft made. When five such combinations were drawn, these numbers were returned to the box and the process repeated. Two hundred and forty such combinations were printed on a sheet nine by twelve inches, and were ready for the pupil. He did not need to write anything but the result.

The initial test covered five minutes of time. The results were tabulated, only correct answers counting toward the score, and the result was divided by five to reduce the score to a one minute basis.

On the day following this initial test, ten minutes of daily drill were given upon exercises precisely like those used in the test. The drill was special in that it was given at a particular time in the day, was given preference to the other school work, and was personally conducted by the writer. Daily reports were made to the pupils showing progress made, errors were corrected, and the need of both speed and accuracy was emphasized. The contest feature entered into this study as the three highest scores in each grade, in each fundamental, were announced each day. This stimulated the efforts of those pupils who were able to get on the honor roll each day, but it did not assist the others who did not receive favorable mention.

This kind of drill was given daily in each grade, in each fundamental for a period of six weeks. At the end of this time, a test similar to the initial five-minute test was given to each grade in each fundamental. An array was then made of the scores obtained in the first test, and the median ability in

each fundamental was noted. The pupils who made an initial score above this median constituted a group for study. Those that were below the median constituted another group. The gains made by the pupils in each group were averaged.

The pupils were also divided into three groups, taking each tertile as a separate group. The gains of each of these groups were also computed. Table I shows the average gains made by these various groups. Low.  $\frac{1}{2}$  means those grouping themselves below the median; Upp.  $\frac{1}{2}$  those making a score above the median in the first test. Low.  $\frac{1}{3}$ , Mid.  $\frac{1}{3}$ , and Upp.  $\frac{1}{3}$ , show the various groups under the division into three parts.

TABLE I

	Low. $\frac{1}{2}$	Upp. $\frac{1}{2}$	Low. $\frac{1}{3}$	Mid. $\frac{1}{3}$	Upp. $\frac{1}{3}$
4th Add.	9.8	10.5	7.2	13.4	10.0
5th Add.	8.2	12.6	7.6	10.5	13.2
4th Mul.	8.2	11.8	7.2	9.8	12.5
5th Mul.	5.1	11.5	6.1	6.5	12.7
Av.	7.8	11.8	7.0	10.1	12.1

The figures in this table represent the gain in the score, or in exercises done, in one minute, or in one-fifth of the time of the five-minute test.

It will be observed that those making the highest initial score have made the best gain. Those scoring above the median in fourth grade addition, made an average gain of 10.5 exercises. Those scoring below the median in this same grade and ability, made an average gain of 9.8 combinations. When divided into thirds, the gains range with the initial ability with the exception of in the middle  $\frac{1}{3}$  of the fourth-grade addition.

Table II. gives for reference the medians of the various grades and groups.

TABLE II

	All	L $\frac{1}{2}$	U $\frac{1}{2}$	L $\frac{1}{3}$	M $\frac{1}{3}$	U $\frac{1}{3}$
4th Add.	19.0	15.7	23.3	14.6	19.0	25.0
5th Add.	25.5	20.4	32.5	18.8	25.8	34.8
4th Mul.	16.0	11.0	19.4	9.3	15.8	20.5
5th Mul.	23.0	16.4	28.5	13.8	22.8	30.5

These medians are for the first test. The medians for the second test may be obtained by adding the gains given in Table I to the medians given in Table II. The gains represent a high percentage of the initial score.

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These results compare rather favorably with those of Dr. Thorndike as reported in *School and Society* for March 20, 1915. In a substitution test, in which initial ability was measured, and afterward fifty minutes of practice and drill given, a table was made of the gains for different groups. His upper group made a gain of 7.4 points, while the lower group made a gain of 6.8 points.

### STUDY II

#### *Abilities as shown by the Courtis A Tests*

During the school year 1910-11, the Courtis A Tests, Nos. 1, 2, 3, 4, and 5, were given twenty-two times in a private school in one of our largest east central cities. The intervals between the tests were somewhat regular. The tests were all given by the same examiner, with automatic timer, and about the same time in the day. Every effort was made to keep the conditions uniform. A limited amount of drill was given during the year, although it was not so intense as that given in the study reported in Study I.

From these twenty-two tests the writer selected six for tabulation, as a basis for this study. These were selected so that three came during the first half of the year, the first selected being the first given at the opening of school; and three during the latter part of the year, the last test selected being the one given at the close of the school year. A twenty-third test, which is the seventh in this study, was given a year after the twenty-second one.

The grades tested were the 5th, 6th, 7th, and 8th. There were 89 pupils in all whose records were complete enough to be used in this study. A very few of these did not take the last test mentioned.

An array was made by grades of the scores made in the first test. The median score was selected in each grade, and this served as a dividing point for grouping the students. Those scoring above the median constitute an upper group, and those scoring below the median constitute a lower group. The average gain of each group for each fundamental, and for copying figures, was computed for each grade for each series of tests using the first as a basis. Table III shows the number of cases and the median for each grade in addition, and the gains made by each group in each test after the first test.

TABLE III  
ADDITION

Grade	No.	Med.	1-2	1-3	1-4	1-5	1-6	1-7
5th	16	27	Upp. 6.50	11.38	9.38	16.63	20.75	24.57
			Low. 5.88	6.63	7.75	13.88	17.00	13.50
6th	17	38	Upp. 5.00	4.88	6.88	11.25	20.88	21.12
			Low. 6.15	8.38	9.63	17.88	26.50	21.83
7th	29	40	Upp. 6.47	6.00	4.50	9.38	17.93	24.08
			Low. 4.27	6.00	8.68	6.87	21.86	27.83
8th	26	57.5	Upp. 2.06	5.38	7.92	6.22	14.54	10.00
			Low. 7.06	7.30	6.76	15.22	17.92	19.10
Totals and averages	88	40.6	Upp. 5.01	6.91	7.17	10.87	18.53	19.94
			Low. 5.84	7.08	8.21	13.46	20.82	20.57

The gains of the upper group are written above, and those of the lower group below in each table.

It will be observed that the upper group has made the best gain in 9 cases out of 24, but when the average gains are computed for each test, the lower group makes the best gain every time. This gain varies from .2 of a point to 2.6 points. Table IV shows for subtraction what Table III does for addition.

TABLE IV  
SUBTRACTION

Grade	No.	Med.	1-2	1-3	1-4	1-5	1-6	1-7
5th	16	18	Upp. 5.88	8.25	12.38	18.38	22.38	22.33
			Low. 10.63	10.50	11.50	19.00	22.63	26.14
6th	17	29	Upp. 8.75	9.62	10.13	15.25	19.25	23.17
			Low. 7.63	7.75	8.25	18.38	23.00	23.33
7th	29	30	Upp. 7.73	9.47	9.67	12.46	22.60	23.45
			Low. 6.40	7.93	10.80	13.80	23.86	27.33
8th	26	40	Upp. 7.84	9.23	8.77	14.07	17.07	15.67
			Low. 9.69	11.61	10.61	13.84	23.54	16.67
Totals and averages	88	29.3	Upp. 7.30	8.64	10.24	15.04	19.83	21.16
			Low. 8.59	9.45	10.29	16.25	23.26	23.37

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The upper group makes the best gains only 8 out of 24 times in subtraction, and in the average gains the lower group makes the best gain every time. The difference varies from .05 of a point to 2.4 points. Table V shows these same facts for multiplication.

TABLE V  
MULTIPLICATION

Grade	No. Med.		1-2	1-3	1-4	1-5	1-6	1-7
5th	16 11.5	Upp.	7.88	8.63	10.50	19.75	23.50	18.00
		Low.	9.75	9.00	12.64	23.63	24.25	29.67
6th	17 27	Upp.	12.00	13.38	12.01	19.25	21.63	17.25
		Low.	10.25	11.63	15.50	26.25	32.38	18.25
7th	30 29	Upp.	10.93	14.66	14.80	18.53	28.09	23.61
		Low.	9.00	11.66	13.22	15.33	31.53	21.58
8th	26 37.5	Upp.	7.76	13.31	13.31	17.85	18.62	9.00
		Low.	10.61	16.46	17.08	23.85	24.62	20.67
Totals and averages	89 26.3	Upp.	9.64	12.49	12.66	18.85	22.96	16.97
		Low.	9.90	12.19	14.61	22.27	28.20	22.54

In multiplication the upper group makes the best gain 7 times out of 24. In the average gains the lower groups are ahead with one exception, and this time they lack only .3 of a point. They are ahead 5.3 points in other places. Table VI shows the results in division.

TABLE VI  
DIVISION

Grade	No. Med.		1-2	1-3	1-4	1-5	1-6	1-7
5th	16 12.5	Upp.	7.53	14.50	12.00	21.63	28.25	18.57
		Low.	9.38	13.00	16.13	21.63	28.13	26.33
6th	17 23	Upp.	9.75	10.28	9.50	15.50	24.13	20.25
		Low.	10.75	14.00	12.63	23.50	33.50	31.88
7th	30 30	Upp.	9.00	12.00	13.33	17.66	23.26	24.00
		Low.	7.33	9.13	12.53	14.93	25.86	28.66
8th	26 45	Upp.	6.11	11.38	8.92	14.61	19.84	13.66
		Low.	11.61	16.15	17.53	21.07	21.84	10.60
Totals and averages	89 27.6	Upp.	8.22	12.04	10.94	17.10	23.87	19.12
		Low.	9.77	13.07	14.71	20.28	27.33	24.37

Again the upper group is ahead 7 times out of 24. In the average gains the lower group is ahead every time. The returns were not complete enough to make a similar table of the results in copying figures.

Thus it is seen from a study of the averages shown in Tables III, IV, V, and VI, that the lower group, or the half with the lower initial ability in the first test, makes the better average gains in all fundamentals in all cases, excepting one, out of 24.

It might be argued that the pupils were not accustomed to taking tests when the first test was given, and therefore it becomes a poor basis from which to compute gains. The writer, to overcome this objection, made an array of the scores made in the fourth test, and from these scores computed the gains made in the 5th, 6th and 7th tests. The pupils were evidently accustomed to taking tests by this time, as that had been preceded by a number of similar tests.

An array was also made of the scores made in the sixth test, and new groupings formed as before, and the gains computed between the sixth and seventh tests.

Table VII shows the medians for the fourth and for the sixth tests in addition, together with the gains made in the later tests upon each of these as bases. The number of cases is given, and the data are given for each grade.

TABLE VII

Grade	No.	4 Med.	ADDITION				6 Med.	6-7
			4-5	4-6	4-7			
5th	16	36	Upp. 4.25	8.75	10.50		43.5	2.00
			Low. 6.50	9.50	11.57			1.43
6th	17	45	Upp. 5.88	13.88	16.33		58	-3.33
			Low. 7.88	14.38	11.33			.67
7th	29	49	Upp. -1.13	13.66	14.53		63	1.08
			Low. -3.26	15.00	17.90			5.91
8th	26	64	Upp. 1.77	4.61	6.67		71	-1.00
			Low. 9.61	12.48	13.67			1.81
Totals and averages	88	48.5	Upp. 2.67	10.10	12.01		57.8	-.31
			Low. 5.18	12.84	13.62			2.46

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The lower group makes the better gains in every case excepting 2 out of 16, and in the average gains is always ahead. Table VIII shows these facts for subtraction.

TABLE VIII  
SUBTRACTION

Grade	No.	<sup>4</sup> Med.	4-5	4-6	4-7	<sup>6</sup> Med.	6-7
5th	16	29.5	Upp.	5.56	10.25	9.67	1.40
			Low.	6.25	12.75	16.14	3.25
6th	17	37	Upp.	4.38	11.38	18.33	5.83
			Low.	10.75	13.75	15.83	3.33
7th	29	40	Upp.	8.00	12.06	15.02	-3.15
			Low.	5.13	14.60	15.46	4.77
8th	26	52	Upp.	6.69	5.07	10.50	-2.50
			Low.	11.92	14.31	11.50	.83
Totals and averages	88	39.9	Upp.	4.36	9.69	13.38	.40
			Low.	8.51	13.85	14.73	2.80

The upper group makes better gains 3 times out of 16. In the average gains the lower group is always ahead. Table IX shows the results in multiplication.

TABLE IX  
MULTIPLICATION

Grade	No.	<sup>4</sup> Med.	4-5	4-6	4-7	<sup>6</sup> Med.	6-7
5th	16	24.5	Upp.	7.50	13.88	10.57	-.07
			Low.	15.13	14.50	16.83	.09
6th	17	37	Upp.	7.13	8.13	11.17	.50
			Low.	11.25	15.50	10.00	-4.67
7th	30	42	Upp.	5.06	13.06	9.70	-15.60
			Low.	2.40	11.08	6.75	-1.85
8th	26	55.5	Upp.	6.00	8.62	5.17	3.17
			Low.	6.85	7.08	11.80	-5.00
Totals and averages	89	39.8	Upp.	6.42	10.92	9.15	-3.00
			Low.	8.91	12.04	11.35	-2.86

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The upper group makes the best gains 7 times out of 16 in multiplication, but the lower group is always ahead in the average gains. Table X shows the results in division.

 TABLE X  
DIVISION

Grade	No.	4 Med.	4-5	4-6	4-7	6 Med.	6-7
5th	16	29	Upp.	5.25	12.38	5.83	-7.67
			Low.	10.88	15.88	13.00	.03
6th	17	40	Upp.	4.00	13.75	10.67	-3.67
			Low.	12.50	24.00	21.17	.00
7th	30	40	Upp.	5.06	10.07	8.00	-7.50
			Low.	2.56	15.86	13.13	4.45
8th	26	60	Upp.	4.07	6.46	.50	-8.50
			Low.	6.00	9.00	4.86	-5.00
Totals and averages	89	42.2	Upp.	4.60	10.67	6.35	-6.84
			Low.	7.99	16.19	13.04	-.13

Only once is the upper group ahead in division, and in the averages the lower group is always ahead. Table XI shows the results for the tests in copying figures.

 TABLE XI  
COPYING FIGURES

Grade	No.	4 Med.	4-5	4-6	4-7	6 Med.	6-7
5th	16	86.5	Upp.	3.75	-1.13	12.28	5.14
			Low.	14.75	18.50	16.00	24.00
6th	17	100	Upp.	2.38	3.75	8.50	5.33
			Low.	15.50	2.38	19.13	6.83
7th	30	105	Upp.	3.40	6.20	9.84	2.90
			Low.	10.66	14.23	20.70	7.38
8th	26	116.5	Upp.	7.08	9.92	19.60	5.40
			Low.	8.69	14.23	14.40	-1.00
Totals and averages	89	102	Upp.	4.15	4.69	12.47	4.69
			Low.	13.28	22.34	17.56	9.30

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The upper group is ahead 3 times out of 16. In the average gains the lower group is always ahead. Table XII gives a summary which includes the average gains made in each ability between the first and sixth tests, between the fourth and sixth, and between the sixth and seventh tests, and the medians in each test used as a basis for measuring gains.

TABLE XII  
SUMMARY

Ability	No.	1 Med.	1-6	4 Med.	4-6	6 Med.	6-7
Addition	88	40.6	Upp. 18.58	48.5	10.10	57.8	-.31
			Low. 20.82		12.48		2.46
Subtraction	88	29.3	Upp. 19.83	39.9	9.69	51.9	.40
			Low. 23.26		13.85		2.80
Multiplication	89	26.3	Upp. 22.96	39.8	10.92	54.6	-3.00
			Low. 28.20		12.04		-2.86
Division	89	27.6	Upp. 23.87	42.2	10.67	55.5	-6.84
			Low. 27.33		16.19		-.13
Copying Figures	89		Upp.		4.69	111.1	4.69
				102		12.34	9.30

The negative gains between the sixth and seventh tests represent losses which are greatest in the upper group.

It seems that in this study, where the tests were given with the greatest of care, and where the test sheets were carefully scored and the results carefully tabulated, the greatest improvement was made by the group that started with the lowest ability. The same result is shown whether we base the gains upon the first test of the year, which was perhaps new to many if not all of the pupils, or whether we use a later test as a basis. The rate of forgetting, or loss in ability, is greatest in the upper group as is shown by computing the changes that take place between the sixth and seventh tests.

It should be kept in mind that the drill in this study was not as intense as that reported in Study I. The results are not so consistent as those in the former study. The contest feature did not result here in urging those near the top of the

group to do still better and thus outdo their fellow classmates. The study covers a whole year of school class work, and any enthusiasm which might result from a short period of training does not affect the final results in any way.

## STUDY III

*Tests in Fundamentals and in Reasoning*

Thirty-four pupils of the 6th, 7th and 8th grades of the Granite Falls, Minnesota, Public Schools were given the Stone Tests in fundamentals and in reasoning. These pupils were then drilled for ten minutes daily for a period of eight weeks. A full report of this study is given in the *Journal of Educational Psychology* for March, 1913. At the end of this drill period, a test similar to the first was given.

For the purposes of study, the pupils were divided as before at the median point into two groups. They were further divided into three groups and a tabulation of gains made for each group. Table XIII gives the medians and gains made by each group, taking all the grades as a whole.

TABLE XIII

		Medians	Gains	Gain %
<b>Reasoning</b>	Upper $\frac{1}{3}$	9.03	1.31	14.5
	Lower $\frac{1}{3}$	3.21	1.56	44.4
<b>Fundamentals</b>	Upper $\frac{1}{3}$	30.35	6.53	21.5
	Lower $\frac{1}{3}$	19.41	7.65	39.4
<b>Reasoning</b>	Upper $\frac{1}{3}$	10.63	.84	7.9
	Middle $\frac{1}{3}$	5.48	1.78	32.5
	Lower $\frac{1}{3}$	2.31	1.82	78.8
<b>Fundamentals</b>	Upper $\frac{1}{3}$	31.82	5.27	16.8
	Middle $\frac{1}{3}$	24.50	7.17	29.2
	Lower $\frac{1}{3}$	17.55	9.36	53.3

In this study, those making the lowest scores made the best gains. This difference is not strongly marked excepting between the upper and the lower thirds in fundamentals. At no time does the upper group make a better gain than that made by a lower group.

The drill given in this study was given by the teacher training students in the high school. They were not artists in drill work; therefore, the drill is less intense than that given in the two former studies. The writer personally conducted the preliminary tests and the final tests. He supervised those giving the training so that a check was possible at all times during

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the drill period. The contest feature did not enter as between different groups, although it did enter when we consider the whole group, as all these students were striving to do better work than another group not included in this study.

### STUDY IV

#### *Tests in College Algebra*

At the beginning of the semester in 1915 the test in algebra shown in the appendix, page 352, was given in four colleges to students taking college algebra. The colleges represented are Central, Penn, Drake and Carleton, which vary in size from small colleges to large ones. 158 students took the first test. The scoring was so arranged that a score of 69 might be made upon a perfect paper. The scores obtained ranged from 3 to 38½.

At the end of the semester the test shown in the appendix on page 354, was given to as many of these same students as possible. 116 students took both tests. Of this group, the median score in the first test was 22. Of the 42 who took the first test who did not take the latter test, 11 had initial scores above the median, and 31 had scores below the median.

The score that might be obtained in the second test is 80. The scores obtained range from 0 to 59. Each school was scored separately as the tests were given under so many different conditions. The results obtained were divided at the median point for each school, and two groups obtained that contained half of the students from each school. Three groups were also made as in former tests, and the gains of each group were obtained.

The work done between the sixteen or eighteen weeks that intervened between the drills was that of the ordinary class room of the various colleges. The drill then in this case, is the ordinary work of the special teacher in charge of these classes.

Table XIV shows the medians, and gains for each of the groups mentioned.

TABLE XIV

	Median	Av. Gain	Gain %
Upper ½	28.0	.310	1.1
Lower ½	17.6	3.293	18.7
Upper ½	30.0	.821	2.7
Middle ½	22.2	1.085	4.9
Lower ½	15.5	3.846	24.8

It will be observed again, that the pupil making the lower initial score has made the better gain, while the one with the high initial ability has made a smaller gain. The difference is more marked in this test, although the gains are very small as compared with the initial score.

The initial ability in college algebra might be difficult to measure, and it is observed that Test No. 1 tests only the fundamental processes in high school algebra. Test No. 2 also contained some topics not treated by all schools. The scores, however, were so divided that the pupil might put in the entire time of the test upon topics that he had studied. The conduct of this study was not entirely satisfactory to the writer, but is the best that was possible to obtain.

It is believed by the writer that the drill is less intense in this study than in any of the former studies. The contest feature did not enter in any way, as those giving the examinations were not aware of just what use would be made of the results. It was promised that the work of no particular college would be mentioned. The writer personally conducted one of the classes, giving both tests, and his class did not know for what use the tests were intended.

In this study, too, the differences in the gains of the groups were more marked than in the former studies. It seems in these studies, that as the intensity of the drill decreases, the gains of those with the better initial ability, become less prominent, while the gains of those with a lower initial ability become comparatively greater.

It may appear that the material in this study is different from that in the other studies reported as the students were of college grade rather than those of the public schools. It was pointed out on page 3 that the writer sought to approach the question from several angles, and this study is one more observation upon the general question of the relation of initial ability to the extent of improvement. It adds a bit of testimony, and the answer it gives to the general problem is not different from the other answers except as to extent of gains made.

#### STUDY V

##### *Tests in the Four Fundamentals*

1,001 pupils of the Boston public schools were given the Courtis B Tests in January, and the same test again in April. The pupils tested were a random selection from about 21,000 pupils. The manner of giving the tests, scoring the results, and tabulating the gains made was that given under the general instructions for giving this particular test. The work done during the interval between the tests was the ordinary

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arithmetic work of the school system of that city. The drill, then, was only the ordinary class work of the regular teacher.

The grades tested in this way are the 4th, 5th, 6th, 7th and 8th. There were approximately 200 pupils in each grade. The scores tabulated are for addition, subtraction, multiplication and division, in each grade with the exception of division in grades 5 and 6. On account of errors in the length of time and in scoring these grades, the results for division are omitted. The exact number of pupils scored in each grade is as follows: 8th—198, 7th—202, 6th—202, 5th—199, 4th—200, making a total of 1,001.

From the results obtained in the initial test, the number of problems right is used as a basis for study. Table XV shows the medians for each fundamental for each grade.

TABLE XV

Grades.	IV.	V.	VI.	VII.	VIII.
Add.	2.8	3.6	4.7	5.6	7.3
Sub.	2.7	4.5	6.5	7.3	8.7
Mul.	1.6	3.3	4.5	5.1	6.6
Div.	.6	2.1	3.8	5.1	7.1

Each grade was then divided into two groups in each fundamental. As there were no fractional scores, the division point for the two group division was made at the nearest point to the median where there was a change in score. For the three group divisions, the divisions were made as near the tertiles as possible, where there was a change in the score. Table XVI shows the number of pupils in each group, in each grade, in each fundamental.

TABLE XVI

	U $\frac{1}{2}$	L $\frac{1}{2}$	U	L	M $\frac{1}{2}$	
Add.	91	107	72	63	63	8th grade.
Sub.	101	97	76	56	66	
Mul.	87	112	64	78	57	
Div.	97	90	60	67	70	
Add.	94	107	68	72	61	7th grade.
Sub.	94	108	64	80	58	
Mul.	87	115	57	68	77	
Div.	99	103	73	51	78	
Add.	102	100	54	77	71	6th grade.
Sub.	103	97	49	80	71	
Mul.	87	114	56	63	82	
Div.	80	119	62	76	61	
Add.	93	104	63	75	59	5th grade.
Sub.	94	105	55	65	79	
Mul.	87	112	60	59	80	
Div.	95	106	68	56	77	
Add.	120	79	71	49	79	4th grade.
Sub.	33	168	33	84	84	

It will be observed that these figures only approximate the halves and the thirds of the total number of students. The average, however, is about right. It was thought better to make the divisions in this way than to make them exactly on the medians and tertiles, as such a division was not well marked where the scores were small and all integers.

Table XVII shows the average gains made by each pupil, in each grade, in each fundamental, by groups of two's and by groups of three's.

TABLE XVII

	U $\frac{1}{2}$	L $\frac{1}{2}$	U $\frac{1}{3}$	M $\frac{1}{3}$	L $\frac{1}{3}$	Average
Add.	1.901	2.645	1.778	2.270	2.937	
Sub.	1.812	3.917	1.728	2.786	4.182	
Mul.	.943	3.080	.688	2.436	3.386	8th Grade
Div.	.871	2.933	.833	1.094	3.300	
Av.	1.382	3.144	1.269	2.147	3.451	2.289
Add.	1.745	2.477	1.750	1.917	2.819	
Sub.	1.457	3.029	1.547	1.950	3.606	
Mul.	1.058	2.696	.929	1.485	3.221	7th grade
Div.	.636	3.339	.795	2.333	2.962	
Av.	1.224	2.885	1.255	1.921	3.152	2.109
Add.	2.000	2.660	1.870	2.338	2.662	
Sub.	.961	3.041	.266	1.775	3.366	
Mul.	.689	2.789	.304	1.683	3.110	6th grade
Av.	1.217	2.830	.780	1.932	3.046	1.919
Add.	1.088	2.328	.855	1.934	2.688	
Sub.	.452	2.769	.000	1.893	3.186	
Mul.	1.159	2.657	.745	1.815	2.899	5th grade
Av.	.899	2.551	.533	1.881	2.918	1.777
Add.	.678	2.259	.500	1.365	2.525	
Sub.	1.232	2.123	1.118	1.929	2.052	
Mul.	1.267	1.834	.944	1.735	1.843	4th grade
Div.	.879	1.786	.879	1.786	1.786	
Av.	1.014	2.003	.860	1.702	2.052	1.538
GAINS IN ADDITION						
Av.	1.482	2.474	1.351	1.970	2.884	2.068
GAINS IN SUBTRACTION						
Av.	1.183	2.976	.932	2.067	3.273	2.068
GAINS IN MULTIPLICATION						
Av.	1.023	2.613	.722	1.831	2.892	1.815
GAINS IN DIVISION						
Av.	.795	2.686	.852	1.738	2.683	1.758
Average gain in all fundamentals: all grades:						1.933

There were no negative gains, and only one 0 gain occurred, that is in the upper tertile of the fifth grade subtraction.

In every case in this study, the pupils making the lowest initial scores made the highest gains. This is true when the pupils are grouped into two divisions, and when grouped into three divisions. The difference in gains by these groups is greater than that of the other studies, and is rather high in proportion to the median abilities of the various groups.

It should be stated here that these pupils were accustomed to standard tests, and had taken this particular test for two or three years before.

It is noteworthy that the best gains were made by the eighth grade, and that there is a gradual decrease in the gains made in each successive lower grade. The average gain for all grades, for all fundamentals, is about 2 problems. The average median in the first test is about 4.7 problems. This may mean that the best time for drill is in the upper grades.

There may be some doubt as to whether the pupils in this study received a less amount of drill than did those in the college algebra. At any rate the results are similar, a large gain for the lower group and a smaller gain for the upper group.

#### *Summary and Conclusions*

We now have before us the results of five studies in which a comparison can be made of the amount of gain, based upon the relation of this gain to the initial ability of the pupil. The studies are arranged in the order of the intensity of the drill given to the students concerned. In the first study there is a great amount of intense drill. In the second study this is less intense. In the third study there is still less of special drill. In the fourth and in the fifth studies, the drill is that of the daily work of the ordinary classroom teacher.

In the first study, the pupils making the highest initial scores made the best gains. In the second study the upper group made the best gain in only 47 out of 176 comparisons, while the lower group make the better showing 129 times. In the third study the upper group fails to make a better gain at any time than does the lower group. In the fourth and in the fifth study the lower group makes a much better gain in every phase of the work. In the last study the group with the lowest initial ability made more than two times as much gain as did the upper group, and this in the face of a much lower initial score. When these results are reduced to rates rather than to differences, the showing for the lower group is accentuated.\*

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\* See Tables XIII, and XIV.

It is noteworthy that each particular study gives about the same general results throughout the whole investigation. That is, each study is consistent all the way through, as far as results are concerned. In no study do we find one group making a better gain in one place and poorer in another.

The writer is able to draw only tentative conclusions at this time. It seems that the amount of training, and the intensity of the drill, have an effect upon the extent of the improvement in such a way that the well-trained individual will respond best if he has a high initial ability. This means that we may build best upon a safe and sure foundation.

At no point in any of these studies was the writer able to foretell what level of attainment would be reached by any definite amount of drill. What gains a given individual may make under a stated amount of drill, does not give in any way a basis for estimating with any degree of certainty what gain he will make from any given amount, or from the same amount of additional training.

It is not apparent that those represented by the lower group, in any of these studies, made low initial scores because of previous neglect. They evidently had the same environment, the same opportunities, the same attention, the same teaching, as did the other pupils in the upper group. Nor is it evident that those in the upper group in any study had about reached the limit of their capacity in these several abilities. The lower group had more room to grow, although in no instance did it reach the level of the upper group.

The intensity of the training, mentioned above, is difficult to measure. The best indication of intense training is found in the interest of the pupils, their eagerness for the drill. There is no adequate measure that will tell how much interest a pupil has. In the first study, however, there was intense interest upon the part of those who were able to make a score near the top. There was real competition among those able to get on the honor roll each day. This incentive made the better students strive to outdo each other, while those in the lower group were not spurred by any incentive except to better his record of the day before. Without this reason for putting forth effort, lacking such a powerful stimulation, the writer's observation is that the better pupils perform rather mechanically. Their ability enables them to pass along without reproof, and they put forth an effort sufficient for an output near the minimum requirement.

Had this competition been introduced among all groups the result might have been different. Had the pupils been grouped into three or five groups, according to ability, and then the

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competition introduced within each group independently of the others, there would have been the same incentive for the pupil with the low initial ability that existed for those near the top. Had the contest feature been eliminated entirely, the writer believes the first study would not have been much different in result than the later studies. The element which made the drill intensive would have been lacking.

While acquisition of knowledge has much to do with enabling the pupil to perform well, no attempt was made to test the pupil's information in these fundamentals, nor in any other facts of arithmetic, nor of other subject matter. The measure

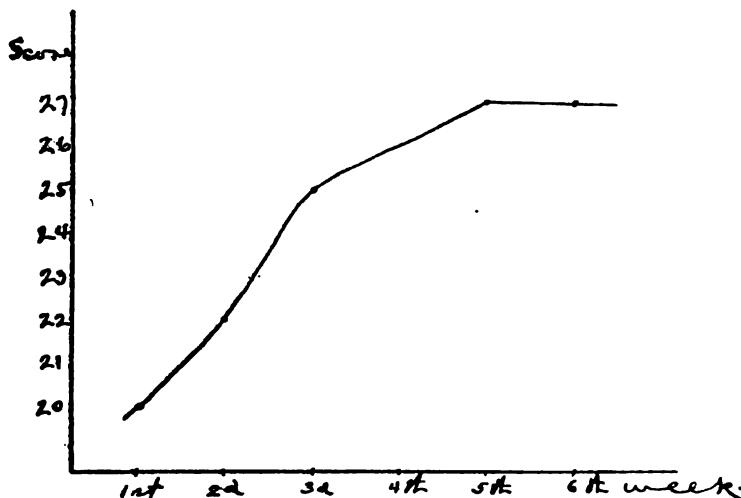


FIG. I.—Curve showing progress made during six weeks of practice in 5th grade multiplication

is simply a measure of the *output, the ability of the pupil to perform, to turn out work*. The number of correct solutions in the given time gave him a score which was used as a basis for the comparisons made. The comparisons are those of groups and not of individuals. The improvement noted is compared in amounts and not in rates.

A study of the learning curves, in the ability to perform, as found by investigators in the field of educational psychology, reveals a law of diminishing returns. These curves are convex. They show that progress is more rapid near the beginning of a period of training than at a later time. There is evidently a limit to the improvement that an individual may make under any system of training. A point is sure to be

reached in the training of every individual, when the returns for a given amount of training are not as great proportionately as they were earlier in the course. This is noticeable in the works of Book, Bryan and Harter, Swift, Lashley, and others. Whether the law applies to the acquisition of knowledge, as well as to the ability to perform, has not been determined.

The writer found abundant evidence of a law of diminishing returns in this investigation. The curve in Fig. I is typi-

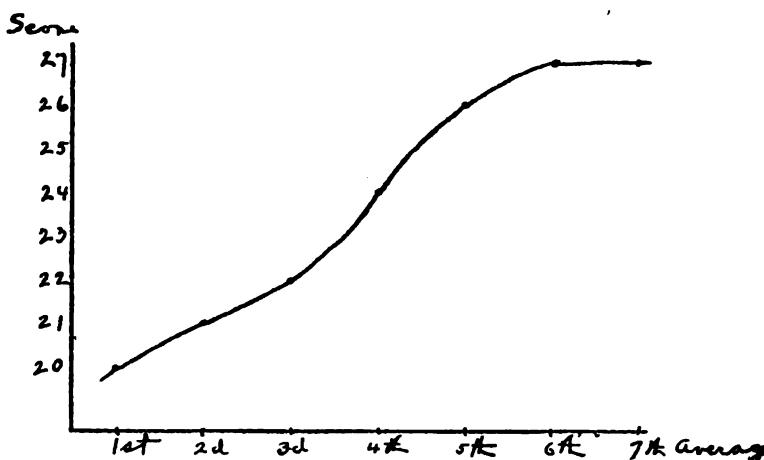


FIG. II.—Curve of Fig. I smoothed by use of the moving average

cal of the curves of progress, where it was possible to measure the improvement from time to time as the drill was carried on. The average scores for the 5th grade in multiplication for the beginning of each week as found in Study I are 20, 22, 25, 26, 27, 27, for the six weeks of drill. The moving averages for this series, including three numbers of the series, are 20, 21, 22, 24, 26, 27, 27. Fig. II shows this series graphically.

The convex curves show that the various groups had about reached their level of attainment incident to the kind of drill they were receiving. It is agreed that this level is not high. The Courtis standard for the 5th grade multiplication is 30. This is the 70 percentile of the group from which this standard was made. The scores given here represent the approximate 50 percentile, for an average of five minutes of work. The writer discovered that pupils do more in the first minute of a

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practice of this kind than they do in any later minute. A brief report of his investigations upon rates of work is published in the *Journal of Educational Psychology* for May, 1916. The first minute averages for the 5th grade multiplication in this study are 25, 25, 32, 35, 31, 34.

It seems to the writer that answers may be made to his questions as stated in the introduction of this study.

1. Initial ability is a factor in the extent of improvement an individual may make during a practice period. It seems that the farther an individual is away from his point of diminishing returns the more improvement he may make under a prescribed amount of drill and training. We will admit that improvement is a sign of ability. But an individual may show a high initial ability and still reach his limit of improvement very soon. A capable individual may have a low initial ability and have plenty of capacity for improvement. These various levels of attainment differ with the several systems of drill under which he may be placed.

2. It is not possible to approximate the level of attainment a group should reach under a prescribed amount of training. The progress it makes depends upon several things, among which are the several capacities of the group, the interest shown in the work, the kind of other interests of the group, the several abilities with respect to the several possibilities of attainment. Many of these factors do not admit readily of measurement.

3. Certain limits do appear in the amount of improvement that may be made under class training as is shown by the nature of the learning curves when applied to the ability to show results under a time limit. It is not the intention of the writer to discover what limits appear in the matter of acquiring knowledge, but in the ability to perform in the several abilities mentioned in this study, as well as in acts of skill investigated by others, limits appear. These limits are inevitable in performance tests.

### *Educational Value of the Study*

From the viewpoint of the school supervisor, these and similar studies aid in answering certain questions in an inductive way. The only way to find the rate of work for a given group of pupils is to have them do specific work under a time limit, and measure the output. If it is desired to know how much work of a given type a certain grade should do in a given time, normal and well taught students should be set to work under prescribed conditions and a measure taken of what they actually do. The effect of the length of a practice period can be

obtained only by varying the practice period and measuring the results of each variation. The proper distribution of the time of practice can be found by trying different lengths of practice periods, distributed in different ways, and measuring and comparing results. Work curves are valuable in showing rates of speed at different times during the work period. The effect of vacations upon the output of a group can be obtained experimentally. Measures of fatigue, when it appears, how it is produced, and how long it lasts, can be discovered only by trying pupils at work for long periods of time, and note when a decrease in output occurs. True, decrease of output has other causes than fatigue, and these other causes can be determined also. Our best evidence of fatigue is in a decrease of output, and this decrease can be determined experimentally. This method of determining causes, and results, is better than to accept mere opinion, and then strive to interpret educational movements, and to shape school policies by these opinions. The light of investigation often reveals misdirection of energy because opinions have outweighed facts where the facts themselves have never been searched out.

From the viewpoint of the pupil these experiments are valuable as agents of motivation. The pupil is pleased to have the educational yardstick applied in a definite way. He has no doubt now in regard to his ability as compared to that of his classmates. He is made to feel his personal responsibility in the matter, and seeks to improve himself with renewed interest. He assures himself that his teacher is not guessing at his ability, but that he is actually measuring it. A better understanding results between pupil and teacher, and between teacher and supervisor, which ought to bring better educational returns.

## APPENDIX

### TESTS IN ALGEBRA

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F. M. PHILLIPS  
Central College

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Name .....

School .....

*Read these directions.*

1. You will be given fifteen minutes to work out some exercises in algebra. Do not turn the sheet, nor examine the exercises until the signal is given for starting.

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2. When the signal is given for starting, open to Exercise I. and work at that until told to start II. When the signal is given start at II. immediately, and work at that until told to start III., etc., until the final signal is given to stop working.

3. If you complete an exercise before the signal is given to start the next one, start to work upon it without waiting for the signal.

4. Put down all the work needed in getting solutions, using the blank spaces on the sheet.

5. In the last exercise use algebraic solutions, do not employ arithmetical solutions, nor guesses.

I. Multiply as rapidly and as accurately as possible during the time given:—

$$5x^3 + 7x^2 - 3x + 4$$

$$\underline{3x^4 - 4x + 6}$$

$$5a^4b + 2a^3b^3 - 13ab^5$$

$$\underline{8a^4b - 7ab^5}$$

II. Divide as rapidly and as accurately as possible during the time given:—

$$\underline{3x^2 - 2x + 7) 15x^4 - x^2 + 17x^3 + 29x - 28 ( }$$

$$\underline{x^2 + 4x + 5) x^6 - 38x + 110 ( }$$

III. Factor as many as possible during the time given:—

$$x^2 - 8x + 15 =$$

$$x^2 - 100 =$$

$$9a^2 + 12a + 4 =$$

$$5x^2 - 8x + 3 =$$

$$a^3 - a =$$

$$x^4 - 64 =$$

$$x^4 - 7x^2 + 1 =$$

$$x^3 - 15x - 4 =$$

IV. Find the value of  $x$  for as many as you can:—

$$1. 6x + 4 = 2x + 24$$

$$2. 8x - 7 = 33 - 2x$$

3.  $3(3x - 2) - 6(4 - x) = 24x - 4(7x - 2)$

4. 
$$\frac{x+3}{5} - \frac{2x-4}{2} = 4 - x$$

V. Find the value of  $x$  for as many as you can:—

1.  $x^4 + 8x = 65$

2.  $x^2 - 5x = 24$

3.  $6x^3 - 5x = 6$

4.  $7x^3 + 5x = 150$

VI. Solve as many as you can. Put down all the work, using the blank spaces on both outside pages:—

1. Three times a certain number added to eight times the number equals 88. Find the number.

2. The sum of two numbers is 32 and their difference is 6. Find the numbers.

3. The sum of two numbers is 63, and five times the smaller equals four times the larger. Find the numbers.

4. A can do a piece of work in 8 days and B can do it in 6 days. How long will it take both working together to do it?

5. How far from a given point may A ride at the rate of 8 miles per hour, in order to walk back at the rate of 3 miles per hour, and be away  $8\frac{1}{4}$  hours.

6. The distance around a field is 140 rods and the area is 1200 square rods. Find its length and its breadth.

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### TESTS IN HIGHER ALGEBRA

---

F. M. PHILLIPS  
Central College

---

Name .....

School .....

*Read these directions.*

1. You will be given fifteen minutes to work out some exercises in algebra. Do not turn the sheet, nor examine the exercises until the signal is given for starting.

2. When the signal for starting is given, start the work, giving about  $1/3$  of your time to each page of exercises. The examiner will give five minute signals.

3. Put down all the necessary work for each exercise, using the blank spaces on this sheet.

---

I

Factor into prime factors:—

$x^4 + 4 =$

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$$12x^2 + 11x - 70 =$$

$$x^{12} - y^{12} =$$

$$x^8 - 10x^4 + 33x - 36 =$$

Solve for x and y:—

A

$$x^3 - y^3 = 98$$

$$x - y = 2$$

B

$$x^3 + 3xy = 55$$

$$xy - 2y^2 = 2$$

II

1. What is the chance of throwing three heads in one throw with three coins.

2. How many positive roots has this equation if all are real roots?

$$x^6 + 3x^4 - 12x^3 - 66x^2 + 64x + 72 = 0$$

3. Given the following logarithms,  $\log 2 = .3010$ ,  $\log 3 = .4771$ , and  $\log 5 = .6990$ , find the following:—

$$\log 4 =$$

$$\log 9 =$$

$$\log 1.414 + =$$

$$\log 6 =$$

$$\log \frac{5}{3} =$$

$$\log 81 =$$

$$\log \sqrt{5} =$$

$$\log 15 =$$

$$\log 45^{\circ} =$$

Resolve this fraction into partial fractions:—

$$\frac{7x - 12x - 67}{(x-3)(x+1)(x-5)} =$$

III

Solve this determinant:—

$$\begin{vmatrix} 4 & 2 & 5 & 1 \\ 3 & 3 & 2 & 5 \\ 8 & 1 & 10 & 2 \\ 5 & 2 & 3 & 5 \end{vmatrix} =$$

Find as many values for x as you have time for:—

$$x^8 - 22x + 36 =$$

## BIBLIOGRAPHY

BAIR, J. H. The practice curve. *Psychological Review*, 1902. Monograph Supplement, No. 10.

BOOK, W. F. The psychology of skill: with special reference to its acquisition in typewriting. University of Montana Publications in Psychology, 1908, Bulletin No. 53, *Psych. Series*, No. I.

DEARBORN, W. F. Experiments in Learning. *Journal of Educational Psychology*, 1910, Vol. I., pp. 373-388.

HAHN, H. H. & THORNDIKE, E. L. Some results of practice in addition under school conditions. *Jour. of Educational Psychology*, 1914, Vol. V., pp. 65-84.

KIRBY, T. J. The results of practice under school conditions. *Teacher's College*, Columbia University, 1913, Contributions to Education, No. 58.

LASHLEY, K. S. The acquisition of skill in archery. Papers from the Department of Marine Biology of the Carnegie Institute of Washington, 1915, Vol. VII. Publication No. 211.

LEUBA, J. H., & HYDE, W. An experiment in learning to make hand movements. Studies from the Bryn Mawr College, Psychological Laboratory. *Psychological Review*, 1905, Vol. XII., pp. 351-369.

LYON, D. O. The relation of length of material to time taken for learning and the optimum distribution of time. *Journal of Educational Psychology*, 1914, Vol. V., 3 parts.

MUNN, A. F. The curve of learning. *Archives of Psychology*, 1909, No. 12.

PARTRIDGE, G. E. Experiments upon the control of the reflex wink. *Amer. Journal of Psychology*, 1900, Vol. XI., pp. 244-250.

PYLE, W. H. Economical learning. *Psychological Bulletin*, 1913, Vol. X., p. 73.

PYLE, W. H. Concentrated versus distributed practice. *Journal of Educational Psychology*, 1914, Vol. V., pp. 247-258.

RUGER, H. A. The psychology of efficiency. *Archives of Psychology*, 1910, No. 15.

STARCH, D. Periods of work in learning. *Journal of Educational Psychology*, 1912, Vol. III., pp. 209-213.

SWIFT, E. J. Studies in the psychology and physiology of learning. *Amer. Jour. Psychology*, 1903, Vol. XIV., pp. 201-251.

THORNDIKE, E. L. Educational Psychology. The Psychology of Learning. *Columbia University*, 1913, Vol. II.

THORNDIKE, E. L. The relation of initial ability to improvement in a substitution test. *School and Society*, March 20, 1915.

ULRICK, J. L. Distribution of effort in learning in the white rat. *Behavior Monographs*, Vol. II., No. 5, 1915.

WATSON, J. B. *Behavior*, New York. Henry Holt, 1914.

WELLS, F. L. Normal performance in the tapping test. *American Journal of Psychology*, 1908, Vol. XIX., pp. 437-483.

WHITLEY, N. T. An empirical study of certain tests for individual differences. *Archives of Psychology*, 1911, No. 19.

## THE WAR AND THE PSYCHOLOGY OF THE CHILD

By Dr. LAWRENCE AUGUSTUS AVERILL,  
Massachusetts State Normal School, Worcester

For twenty-five years, the Department of Child Study in the Massachusetts State Normal School at Worcester has been making systematic observations of children of all ages and all walks of life. Thousands of returns have been published from time to time either in book form or in the pages of educational periodicals—notably the *Pedagogical Seminary*. In fact this school may be said to be the cradle of child study in this country, inasmuch as it was her students who, laboring under the inspiring direction of the first Principal, the late E. Harlow Russell, and in closest sympathy with the founder of child study, President G. Stanley Hall of the neighboring Clark University, were the first group of American observers in a large way to study both intensively and extensively the mind and the soul of the child.

For nearly three decades it has been the practice in this School through its Department of Child Study, to supplement the training of young teachers with a liberal amount of experience in studying child nature directly and objectively. The city of Worcester has a population rapidly approaching the 200,000 mark, and the great diversity and extremely cosmopolitan type of her population not only afford ample opportunities for the free observation of children, but make any attempt at studying them particularly interesting. The motto of the Department has remained unchanged since the early nineties; it is this: *The master workman must know his material*. The master workman is the master teacher; the material is the child. Armed with this philosophy, the students each year enter quite voluntarily upon their 'observation campaigns,' and never without obtaining both interesting and surprising results. At the end of a few days most of them have noted new things in the children at their own homes which they had never suspected existed. By the end of a week they find themselves overwhelmed with interesting and wonderful discoveries; and by the time the course has ended they have come, in most cases, not only to feel a keener interest in children but, and equally important, to possess trained insight and higher powers of observation—traits that will stand them in good stead when they actually enter upon the profession.

In most cases the observations made are quite uncontrolled; that is to say, ordinarily the method pursued is entirely free. The students endeavor so far as possible to note merely the spontaneous activities and reactions of children. They try never to let their 'material' even suspect that they are being watched or listened to, the idea being to rule out all suggestion and all conditioned response. The child on the car, or in the street, or on the playground, or in the house, or over the book, or in the gang, behaving in a perfectly free and unconstrained manner, is the ideal for observation kept always in mind. The child wide awake and intensely active; the child at work or the child at play; the child alone and the child in the group; the child serene and the child under stress of the emotions; the child working and the child at sleepy time—each condition is equally promising to the interested and inquiring student.

Child study blanks for permanent records of all observations made are supplied and carefully checked up. Those which are mediocre, or those which, while faithfully mirroring a child's reactions, do not really add to the science of child study, are destroyed. As the year passes, however, it is found that this type of observation becomes less and less common. Those returns which, on the other hand, are of special significance are carefully tabulated and filed for future use. It is an unusual week when from two hundred to three hundred interesting observations are not reported by the students.

In going over the several thousands of observations recorded in this Department during the past fall and winter months, I have been particularly struck with the great number of returns which indicate the interest children are manifesting in the great war.<sup>1</sup> Under normal conditions, the percentage of strictly military observations is very low; but during the past year some 10% of all our observations fall within this general classification.

The reason for this keen interest which children are taking in things military is not far to seek. They are hearing war talk, seeing war scenes, saving in the interests of war, living in an atmosphere that is becoming increasingly war-like; why should they not feel war and play war? Feelings do not lie very deep in a child, and what he feels keenly he dramatizes. And yet there are superintendents and teachers still who think the war ought not to be taught. After all, it makes little difference whether we teach it or not for we may be sure that the child, living continually in a war environment, is coming more

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<sup>1</sup> This paper was written shortly before the close of the war.

and more through imitation and emulation to think, act and play in terms of war. In Germany, we are told, the school children are not only being taught about the struggle, but they are at the same time being imbued with a fiery patriotism such as was never before known even in Germany, where for generations children have been drilled almost from the cradle to glorify the fatherland and the kaiser.

One rather significant thing since the war started has been the influence which it has exerted over the plays and games of children. War games and war toys have multiplied more rapidly than any other variety of amusement. Playing soldier, digging trenches—in either snow or earth according to season; marching games; martial songs, airs and ditties; military drill—more or less according to manual; military dress and postures;—these are but a few of the many tokens of the way the child is weaving the war into the fabric of his play life.

The purpose of this discussion is not, however, to generalize upon juvenile reactions to the war; it is rather to enumerate a great many aspects of the war as seen through childish eyes. The data represent selected observations taken from several hundred returns made by students from their direct study of children. For greater uniformity I have grouped these observations under 5 headings, although naturally no very close lines of demarcation can be drawn between the different groups. As they stand, the observations represent a considerable number of free, native responses made by children of all ages to the general situation: war.

1. *Playing at war.* This group includes by far the greatest number of observations. There seems to be no limit to the facility with which a child can relate the most commonplace experience in some way with the notion of war.

Two boys standing opposite each other at a distance of some twenty-five feet playing foot-ball. Between them are drawn two lines. One boy kicks the foot-ball toward the other, and if it falls beyond the line nearest to the other boy it is promptly acclaimed "an American bomb." If it falls short it is dubbed "only a German bomb." That boy becomes automatically the winner who succeeds in getting the greatest number of "American bombs" to his credit.

Two boys, waxing enthusiastic over the war, one says: "I'll be a United States Soldier and you be the German!" (In all the returns it is an unwavering rule that the 'German' soldier is never the leader; apparently it is an unpopular rôle). The other boy replies: "No sir! I'll not be the German, for you know a 'United Stateser' can kill a German!"

The day after the kilts paraded in the city, the atten-

tion of every one was called to a large group of boys who were dressed in all sorts of costumes imitative of the Scotch. Their stockings were pulled down over their shoes; they had rag bags for skirts and tin basins decorated with paper streamers for hats. They were marching in single file, some having flags, others sticks to represent guns and swords. They were very noisy and created considerable attention on the part of by-standers. There were about twenty boys in the line, and their ages ranged from eight to fifteen years.

A was an interested observer of the following incident which took place after school on Friday. A group of boys took possession of a discarded barn which lay in the rear of A's yard. This they called their 'munition factory,' for in it they had gathered together all sorts of ammunition and war paraphernalia. This included air-rifles, wooden guns, canes, tin pans and two boards nailed together in such a way as to give a fairly intelligent observer the idea of a cannon. Here they got their equipment and immediately resolved themselves into two groups, one jumping over the fence and taking up its position on the other side. At a given signal a boisterous shouting was heard along the fence and the battle was begun. At a second signal a few minutes later the fighting ceased as abruptly as it had started; the combatants reformed into one group and marched off down the street singing *The Star Spangled Banner*. One played a drum by beating two sticks furiously upon a tin pan; another played the flute—an old harmonica. At the command "Attention!" every one stopped and then various gun movements were gone through. With the command "March!" the band continued on its way until it came back to the old barn. Chancing again to pass through this vicinity yesterday, A beheld one boy ostracised from his fellows and confined in the barn-yard. Upon inquiry, A learned that he was a 'German spy' who had been detected in the act of peeping around the corner.

A new building being in process of erection and the cellar only just completed, a group of children armed with rifles and paper hats made their trench headquarters within. One boy only stood in the open giving commands, and informing his men of the approach and strength of an imaginary enemy. A few of the boys fell back in the trenches in the course of the action, severely wounded. Two others, the only possessors of Red Cross buttons, advanced through the dark trenches and bore them one by one off the field.

There are many instances of both girls and boys tying strings about their waists and fastening to them all sorts of wooden swords, guns, pistols and ammunition pockets. An

old garden cultivator tipped bottom-up becomes a mighty war ship, with the teeth serving admirably as big guns. Discarded tin soldiers are resurrected under the inspiration of the war interest and are incorporated into allied and German fighters. The chief attraction of the toy counter becomes the soldier's belt, the horn, the pistol and the sword. 'Wounded' soldiers are succored and revived by potions poured between their smiling lips, and their wounds are stanch'd by handkerchiefs and neckties bound promiscuously about their bleeding members. The tent in the back yard takes on a new interest as a boy makes it his military headquarters and stations his men about it as a body guard. Tunneling in the snow is no longer done without a strict military purpose; snow forts are located in most strategic sectors of tunnels and trenches. A stick with a bit of colored paper pinned to it answers very well the purpose of a flag for those who have no more imposing banner. The military salute is accorded to whomsoever chances to pass; or it is given to a flag either waving from a pole or stuck between the lattices of a blind. A real soldier at a camp becomes a hero, and after a visit from such a grand personage one little boy became dissatisfied with his own name and begged his mother to call him by the soldier's name. Opposing 'scrub teams' and basket-ball teams are American and German in personnel. Leaders in war games adopt the names of brilliant contemporary statesmen or soldiers. Thus, President Wilson and the Kaiser often glare at each other from behind fortified places. General Joffre and General Pershing engage Hindenburg and von Kluck in mortal combat, and, if the former are not sufficiently valiant to vanquish them utterly there are always Uncle Sam and King George to back them up.

The greatest ingenuity is shown in our returns in finding fitting insignia and decorations for the troopers. Colored tinsel cord, bright papers, brass buttons and firemen's caps vie with parts of discarded Grand Army uniforms or buttons surreptitiously and stealthily removed from them, crosses cut from red paper, boy scout suits, flags and feathers. Black shoe buttons are bullets. Girls wear white shawls, white aprons, white neckerchiefs, and most often assume the rôle of Red Cross nurses. For drums and band instruments a great variety of implements and utensils are pressed into service. Tomato cans, dish pans, wash basins, boiler covers, garbage pails, inverted peach baskets suspended from the neck by strings are all equally good. Two tin covers clanged together make inimitable tambourines. Helmets are made readily by slitting down an old stocking or a toque and

pulling it over the head. A fairly satisfactory cap is constructed from paper; a better one from pasteboard. A gun may be either a pistol, an air-rifle, a bow and arrow, or, and in most cases, merely a stick. Sharpened sticks become bayonets. If an attack is made so unexpectedly that there is not time to entrench, a stone wall or even a hedge affords a desirable protection against the artillery of the enemy. A harmless pear tree in the back yard is transformed at sight in the mind of a six-year old into a formidable German, and a cautious course is steered about it for a few moments, after which the soldier falls to beating it with his stick. The 'Harvard Relief Corps' marches down the street to the tune of 'America,' each member of the unit holding to the shoulders of his fellow in front. Passers-by are accosted with the sharp challenge: "Are you a German?" Upon denial of such nationality, the pedestrian is allowed to proceed with the command: "Very good! Pass on!" The brow of a hill is made the fighting ground between two hostile armies which have crept up either side. Even after retiring to bed at night the glamor of war remains bright and boys well entrenched behind their blankets lull themselves to sleep by shooting Germans. Any boy who is so fortunate as to possess a Boy Scout suit, a fireman's cap or other insignia of distinction is proclaimed captain, or general, regardless of temperamental qualifications. A 5-year old becomes so animated upon hearing the war discussed by his father and mother that he dances about in a whirlwind, doubles up his fists, strikes his playmates and keeps shouting ecstatically: "Playing wars! Playing wars!" A stingy, unsocial or otherwise *persona non grata* playmate is dubbed a slacker, and so heralded among his fellows. Rein-statement in grace is granted readily as soon as the offending party manifests due intent to conform.

2. *Playing imaginaries.* A considerable number of our returns may be rather generally classified under the caption. It appears that boys and girls try to visualize real war scenes as they must appear at the front, and take endless delight in manipulating this imagery. In general, however, it is the older children, i. e., those between seven and ten, who find such imaginings interesting. With the younger children, it is quite enough to play at war rather boisterously and without making any particular attempt to reproduce real war conditions either in their games or in their imaginations. It is only when they get a little older that there comes the desire for greater accuracy in detail and reality in imagery as they endeavor to comprehend the war and to dramatize it in their sports. A toy train is laden with sticks and papers and run express in

and out among the tables and the chairs until there is a crash and a wreck. The freight carried represents food and guns which are being rushed to France. The wreck is caused by an obstacle placed by the Germans in the pathway of the on-coming train. Fighting in the trenches is represented as not being in progress over Sunday, in order that the soldiers may "look at the funny picture papers!" One boy of six grew so apprehensive upon learning something about the Germans blowing up houses and buildings with bombs that he was reluctant to go to school, fearing that the schoolhouse might be blown up. Asking God to bring back safely his father, who had recently enlisted, an 8-year old added: "And I hope some day I will grow up so I can help Papa lick the Germans!" The arrival of a new family in a street is the stimulus which sets off the boys of the neighborhood to parade back and forth in front of the house, crying: "Germans! Germans! We have got Germans moving into our street!" The new boy is at once dubbed a German, and refused admission to the gang. A 7-year localizes the war zone as "down Boston, where the Germans are shooting the Boston people." One boy has experienced a great interest in cartoons of the Kaiser, and has actually cut out over four hundred of them from various magazines. Children are promised war stories as rewards for being good at school, all day, and look forward to them with keen anticipation. Liberty bonds are constructed and shouted on the street by youthful salesmen for 5 cents. "Shut up! Don't you know you oughtn't to speak when the 'Merican flag is around!" is the greeting which a 7-year old returns a thoughtless girl who had merely said: "Hello!" The proud possessor of a "shoulder suit" makes very active preparation for departure to France within a week, although he is only four. Another boy, somewhat older, exclaims to his fellows: "I hope the war keeps on 'till all the soldiers are killed; they'll have to take all us boys then! I'd kill every German and then come home!" An 8-year old girl figures out the procedure in the sinking of a vessel by a German submarine thus: "The submarines are under water, and when a ship goes by the people in the submarine throw up a long rope. This catches on to the bottom of the ship, and the people in the submarine pull down the rope and the boat sinks!" Another girl of the same age describes the German method of blowing up ships thus: "They take a little powder on their submarine and when any ship comes along, the submarine goes to the top of the water and throws a little powder on the ship, and then it explodes."

Two men pruning the trees are watched carefully by a crowd of boys below. Someone asks: "What do you suppose they are doing?" Another answers: "I think they are up in the trees looking over the city for Germans!"

3. *Red Cross Games and Plays.* The activities for war relief of the Red Cross appear to strike at once a responsive chord in the breast of nearly every child, regardless of his or her age. Red Cross buttons are quite as much badges of honor as are swords, or guns or helmets. Knitting becomes an occupation at once dignified and universal. For needles, a stick will do. An old shawl is found and immediately a needle is run in and out along the edge, and the 4-year old announces that she is knitting for the soldiers. Even the boys do not find knitting beneath them, and there are scores of returns of boys knitting with pins, needles, wires, sticks, wire hair pins, etc., etc. One boy of 8 walks to school beside a girl who is knitting. The ball of yarn is unwinding slowly from his pocket where he is carrying it very proudly. A girl refuses to knit the "German way." Wounded dolls are rescued by Red Cross nurses and carried away to the hospital for medical attention. A 4-year old girl is preparing to go to France in a few days as a nurse. Red Cross nurses and ambulance drivers hover over the field of battle in the back-yard and dash in gallantly to rescue the bodies of those who fall in battle.

4. *War music.* The war atmosphere is extremely provocative of singing and marching among children; often, however, the older songs are not satisfactory, and they are therefore altered *ad lib.* in the mouths of the youthful patriots. Frequently, too, the jingles are quite original and rhythmical, if not artistic. "America," "The Star-Spangled Banner," "America, here's my boy," and "John Brown" are the orthodox melodies most often sung unchanged. Among children who do not have the skill to actually compose rhymes, monotonous repetitions of "la, la, la" or "hip, hip, hip," always to the march step, are found satisfactory. "America, I raised my boy for you," "America, here's my boy," "I didn't raise my boy to be a slacker" are among the popular versions which are either sung as originally written or with alterations. The "red, white and blue" offers a popular nucleus for elaboration, and is very commonly used as a basis for original composition. "Tramp, tramp, tramp" is a similar stem for extempore development. Two versions of the elaboration of this theme follow. They bear a strong similarity, and doubtless had a common origin, but through the dispersion of juveniles they have been considerably modified.

A. Tramp, tramp, tramp, our boys are marching.  
Marching far away to war.  
They have got a pumpkin pie  
To 'spot' the Kaiser in the eye,  
And there'll never be a Kaiser any more.

B. Tramp, tramp, tramp, the boys are marching.  
Off to Germany they'll go.  
They will buy an apple pie  
Hit the Kaiser in the eye  
And you'll never see the Kaiser any more.

5. *Killing the Kaiser.* In the minds of the children, the great arch-villain, the Kaiser, is the one person in the world most to be despised and rejected of men. A 6-year old proposes that a good dose of castor-oil be given him—"That'll kill him sure!" A 4-year old boy, not satisfied with having killed one Kaiser, devotes a whole day to the business, and when night comes startles his elders with the justly proud assertion that he has killed five Kaisers so far, and has a lot more rounded up to shoot to-morrow. A 5-year old playing on the floor, seeing a Jack o' lantern being flashed against the window pane, exclaims in much alarm: "Quick, papa! Get your gun! There's the Kaiser!" Two boys gazing in a store window, one remarks: "I have a penny to spend." The other advises: "Save it to buy a bond to kill the Kaiser!" Upon seeing an actor dressed after the fashion of a Scotch Highlander come on the stage, a 6-year old girl whispers to her father: "I wish he would go and kill the Kaiser!" A group of 10-year old boys originated an interesting jingle, "Close the door on the Kaiser!" which they chanted proudly together.

And so the hatred of the Kaiser, so often and freely expressed by their elders, finds fertile soil in the imaginative minds of the children, and we find them instituting all manner of plots to waylay, abduct, shoot, stab, drown, hang, disembowel or otherwise cut off the Kaiser out of the ranks of men. Amid the greatest secrecy and solemnity, groups of boys swear eternal and undying hatred of him. In their day-dreams they have visions of themselves obtaining through some stealthy ruse audience with him, and then engaging him in mortal combat, of shooting him, or stabbing him, or dashing out his brains with their guns. Apparently if the reputation of the German emperor among future generations is to be cast from the estimate which young America in the present generation has formed of him, it will be anything but a flattering and enviable one.

## AN INTELLIGENCE SURVEY OF A TYPICAL TOWN SCHOOL

By R. H. SYLVESTER, Ph. D., Clinical Psychologist, State University of Iowa

In the spring of 1917 the College of Medicine of the State University of Iowa conducted a very careful health survey of the Wapello, Iowa, public schools. The report was to have been published that year, but some of the examiners went into military service and the preparation got little beyond the bulky preliminary report that went to the authorities at Wapello. This paper is a revision of the Mental Survey Section of that report. It does not include the high school.

Several communities had requested health surveys, and the College of Medicine decided it could best serve all by selecting a typical one, making as thorough and painstaking a survey of it as possible, and working out the results in such form as to be serviceable to all. Wapello, although not the most convenient to the University, was chosen because it was the best representative of the group of towns that had requested surveys. It is a county seat, the center of an agricultural community, and its population at the time of the survey was 1,614. It has no private schools, no predominating foreign population, and very few transient families.

Physical examinations were made by physicians of the College of Medicine, dental examinations by an instructor in the College of Dentistry, mental examinations by the writer and his assistants from the Psychological Clinic, and the environmental investigation and case history data were in the hands of a highly competent school nurse. Teachers gave all possible cooperation and assistance. Each examiner had adequate equipment and the best of facilities, was allowed unlimited time, and was encouraged to make his studies as thorough as possible. The one lack of thoroughness was in the fact that the children were undressed only down to the waists and their shoes and stockings removed for the physical examinations. Only when indications suggested the importance of it and parents consented were they entirely undressed. Intelligence measurements and mental examinations were after all other parts of the survey had been completed and their results made available.

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TABLE I  
INTELLIGENCE RATINGS

Age on Near- est Birthday	Very Superior	Superior	Average	Inferior	Very Inferior	Total
5		2	2	1		5
6	2	4	8	3	1	18
7	3	2	17	4	1	27
8	4	3	14	1	2	24
9	3	5	14	4		26
10		5	18	3	2	28
11		6	17	4		27
12	2	1	14	2		19
13		7	16	2	2	27
14	1	5	19	3		28
15		2	17	1	3	23
16			7	5		12
17			2	1		3
Total	15	42	165	34	11	267

Table I displays the intelligence ratings from very superior down to the very inferior, and arranged according to the ages of the children. These ratings were based on the Yerkes-Bridges Point Scale<sup>1</sup> supplemented by the form board test and others and by a study of each child in the light of his physical condition, his personal history, his family history, his school history, and his general mental behavior. The ratings are therefore much more accurate than unmodified quantitative ratings according to a mental measuring scale.

To guard against injustice to individual children, all doubtful cases were thrown toward the average. For instance, if there was doubt as to whether a child belonged to the "very inferior" or to the "inferior" group, he was placed in the "inferior;" if there was doubt as to whether he belonged in the "superior" or in the "average" group, he was placed in the "average." It is less serious to label a child as average or near average when he belongs at an extreme, than to make an average child and those who have to deal with him feel that he is unlike other children by labeling him extremely bright or dull.

The five and six year old groups show a low proportion of "average" cases. This is due to the tendency of all mental

<sup>1</sup> Some of the Yerkes-Bridges questions were given in the upper grades in group test form. The plan had been developed by the writer as a means of saving time in earlier school surveys. It was submitted to Dr. Yerkes before the Wapello Survey was begun, and met with his full approval.

measurement results to scatter widely with young children, and to the fact that individual differences are more noticeable in young children. Further, school training tends to bring children to a common standard and to eliminate variations and atypical features.

Another irregularity in Table I is in the fifteen, sixteen and seventeen year old groups, there being no "very superior" and but two "superior" cases. The reason is obvious, namely, that those of these ages who were of higher intelligence had passed on out of the grades into the high school and so were not included in this part of the study. Other irregularities in the table are due to the limited number of cases. In general distribution it is, for so limited a number of cases, quite regular through all of the ages from seven to fourteen.

TABLE II

School Grade	Very Superior	Superior	Average	Inferior	Very Inferior	Total
Not in school						
Kgtn.	2	4	9	5	2	23
I	2	4	23	2	1	32
II	2	2	16	7	2	29
III	5	5	19	3		32
IV	2	8	17	2	1	30
V		4	24	7	2	37
VI	1	3	11	3		18
VII	1	7	23	2		33
VIII		5	23	3		31
Total	15	42	165	34	11	267

Table II shows the distribution of ratings by school grades instead of by ages. The two "very inferior" not in school were low type feeble-minded, of school age but not fit to attend. The kindergarten ratings show the low proportion of "average" cases that was observed above in the five and six year old groups. The one conspicuous irregularity in Table II is in the Fifth Grade. The large proportion of inferior children here is due to sorting by the course of study, which sets a barrier at the Fifth Grade which cannot be passed by extremely dull children. Consequently the Sixth Grade is small in numbers and several boys and girls of inferior ability, who might otherwise have been there, have dropped out or were retained in the Fifth Grade. There was a special row of seats in the Fifth Grade for these larger pupils.

Of the 267 children, 15 were rated as very superior in in-

telligence and 11 as very inferior; 42 others were definitely above the average, and 34 were definitely below. The other 165 were rated as "average." The criteria for these five groups are the generally accepted ones, but it is perhaps well to discuss each. The 11 "very inferior" include the feeble-minded and the extremely dull. Such individuals are social rather than educational problems. A school's responsibility for them is limited to directing the institution cases to where they should be cared for, and to training, so far as is reasonably possible, the others for the grade of vocation and life to which their mental limitations will hold them. The "inferior" group of 34 is a mixed lot, but the majority of this type are never able to do good work in school or to rise high in the plane of living. A few would probably rise to the "average" intelligence group if their physical ailments were cured and their home care radically changed, but the greater number have irremediable physical defects or have an hereditary lack of mental ability. The "average" group of 165 includes a wide variety of types and a considerable range of ability, but none of its individuals are conspicuously dull or conspicuously bright. They are the ordinary boys and girls according to whose ability the curriculum is planned and lessons assigned. Nearly all get along better in some subjects than in others, and they often need individual help. The "superior" group is made up of the so called "good" or "bright" pupils, who do their work easily and well, and who usually achieve what we wish that all children might achieve. They do more of the reciting than the average, really carry the burden of the recitation, require little individual help, and as a whole are the ones who are best off when milled through the curriculum in the established routine. The 15 "very superior" have unusual endowment. The curriculum is too easy for them, and they chafe under the graded routine and rate of progress. The problem is to give them sufficient worth-while work, to keep them from over-working at tasks requiring long sustained effort, and to prevent their becoming spoiled and conceited.

So much for a general consideration of the survey results in terms of intelligence ratings. Attention is now invited to the results of clinical diagnosis as shown in Tables III and IV.

The distribution of clinical types by ages would add but little to the information in those two tables, so space is not taken for it. Of the 267 children, each of the 109 shown here gave evidence of mental peculiarity or of a hampering factor. Presumably the other 158 were developing as nature intended them to. Some of the 109 were of course mild.

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TABLE III

	Very Superior	Superior	Average	Inferior	Very Inferior	Total
Feeble-minded				1	3	3
Dull				7	7	8
Environmentally hampered			3	18	4	25
Physically hampered			38	28	11	77
Pedagogically hampered			9	5		14
Psychopathic	2	1	4			5
Nervous		3	8		3	22
Over spontaneous			6	10	4	20
Lisper				2	2	4
Stutterer		1		1	2	4
Epileptic					1	1
Total peculiarities	2	5	68	71	37	183
Total individuals	2	4	50	39	14	109

<sup>2</sup> A total of 1040 physical defects were found by the medical and dental examinations, but only these 77 seemed to be interfering seriously with mental development.

TABLE IV

	Out-side	Kgtn.	I	II	III	IV	V	I.VII	VIII	Total
Feeble-minded	2	3	1	1			1			3
Dull,							2			8
Environmentally hampered		5	3	6	3	3	4			25
Physically hampered	2	7	7	14	5	6	17	3	7	77
Pedagogically hampered			2	1			4	4	2	14
Psychopathic			1	2			2			5
Nervous	2	2	3	5	5	5	1	2		22
Over spontaneous	1	3	3	4	1	1	4		1	20
Lisper			2			1	1			4
Stutterer	1			1			2			4
Epileptic			1							1
Total peculiarities	8	20	22	31	14	21	37	5	11	183
Total individuals	2	10	13	17	9	12	23	4	8	109

Here again is found what is to be found in any ordinary school. Always the largest number is hampered by physical causes, many by faulty environment, many are mild nerve cases, and many have the fault of over-spontaneity. Again the distribution by grades is less important than the totals.

These 109 children carry 183 peculiarities, defects and ailments having a noticeable effect on intelligence. In more than half of the 109 only one factor is potent, but in some there are as many as five. For instance, one of the feeble-minded children stutters, is physically hampered, functionally nervous and over spontaneous.

The various types, defects and peculiarities are defined and the causes suggested by their names. So we may proceed with a brief discussion of the distribution of each in the tables. No *feeble-minded* child can be above very inferior intelligence or make progress in school. One of Wapello's is an imbecile who has never been sent to school. Another is a moron who has attended for a few weeks and who was excluded by the school authorities. The third is an epileptic who has attended second grade irregularly but is accomplishing little. Most of the *dull* are in the "very inferior" group. In fact, some of them are border-line cases and may later prove to be feeble-minded. No *environmentally, physically or pedagogically hampered* children rate above "average." Several of them, however, would have passed into a higher intelligence group if they had been relieved from the hampering factors. The *psychopathic* group is a small one, of average intelligence or better, as would be expected. *Nervous* children are distributed through all grades in school and through all grades of intelligence. Apparently a child may be seriously nervous and yet highly intelligent. This type should have been divided into the organic and the functional. *Overspontaneity* does not permit of a display of high intelligence and is found in some of the lowest. The *faulty articulation* cases are of low intelligence. This is usually the case but there are many exceptions,—speech defects in children of high intelligence. *Stuttering* is almost as frequent in the highly intelligent as in others. *Epilepsy* is usually associated with low intelligence or produces it, so the one case listed here is not misleading in its location in the tables.

Discussion of these four tables is by no means exhausted, but we shall close by inviting attention to the evidence in the tables that children of low intelligence tend to have the most peculiarities and defects. The two "very superior" children in Table III are there, only because of nervousness. The four "superior" have but 5 peculiarities and the fifty "average"

but 68 altogether, while the thirty-nine "inferior" have 71 and the fourteen "very inferior" have 37.

#### CONCLUSIONS AND RECOMMENDATIONS

"There were the usual number of children suffering as to mental development because of neglected or overlooked physical defects and ailments. This calls for the permanent services of a school physician or at least of a school nurse. Considerably less than the usual number are hampered by poor home environment, but there are the usual number of over-spontaneous, over-active, high pressure children from well-to-do homes.

"There are not enough atypical children demanding segregation to warrant the establishment of an ungraded room. An auxiliary teacher is recommended. She should have training in clinical psychology so as to be proficient in the administration of mental tests and in the diagnosis of mental weaknesses and peculiarities. She should have experience in primary teaching and some teaching in other grades. She would spend most of her time helping individual children sent to her from the various rooms, individually or in small groups. These would be sent for the following reasons and others; to make up lessons missed by absence, to get help in some special subject or topic, to be given training because of general backwardness, or to be pushed ahead in preparation for skipping a grade. She would direct the handling of every atypical child, and she would therefore examine and keep in touch with many children whom she would not herself teach. She would keep in close touch, at least in an advisory way, with the parents of feeble-minded children, would clear up speech defects, and work in close cooperation with the school nurse on physical and environmental cases. She would follow the over-spontaneous children through their special care and training at home and at school. Under her direction and with her help regular teachers would be able to do much more for certain individuals. Finally, she would assist the superintendent in planning adjustments to meet the needs of individuals and groups that happen to appear, such as those in the present Fifth Grade. The auxiliary teacher, then, would be on hand permanently to attend to whatever might be needed in the way of mental hygiene and mental health in the school system."

## SUMMER CAMP AS EDUCATION FOR LEISURE

By A. E. HAMILTON, M. A. (Clark '12)

I am assuming without argument that the fundamentals of character are formed not so much under the pressure of routine school-work or business task as under opportunities for choice of action, under the freedom to do as we like, under the chance to follow our feelings where they lead.

The ideal of the best educational summer camps is to give boys and girls real character-building stuff through the training of the feelings and emotions through wholesome choices after the nine months of intellectual exercise and "mind training" in the school-room.

Camp taps the primitive impulses like nomadism, wanderlust, fightiness, shelter-building, home-making, hunting, cooking, etc., and gives them channels for wholesome expression in ways which, while training mind and body, also, and more importantly, train the feelings and emotions healthfully. Camp is, at its best, essentially a spiritual institution, and that without necessary reference to any theology orism whatever.

Camp brings a boy romance, adventure, pioneering, exploring, the joy of accomplishment through hardship, the excitement of the woodland chase of "enemy" or "game," and the thrill of loyal team work in war-canoe and inter-group competitions.

Stars, clouds, moonrise, night noises, from gentle borings in wood to the call of the whippoorwill, grey dawn, rose dawn and birdsong in the morning, glimpsed and listened to from the blanket bed on pine-needles or sand—these things draw out the dawning soul-stuff in a boy or girl and leave an impress that will never wear away.

And Camp trains the feelings to choose things wholesome, to like things that make for health of body and mind, the life more abundant.

The biggest contribution of summer camping for boys and girls is probably going to relate to the increasingly vital problem of leisure time, and the use of leisure.

The ideal summer camp, as Doctor Gulick has pointed out, affords opportunities for choice of activities, it presents attractive temptations to wholesome actions and occupations. It leads by positive magnets so arranged that one's individual

choice determines largely his or her course of training. And it is essentially a training in the selection of things one wants to do in his leisure time.

For camp is essentially *schole*, leisure. It is a harking back to the old Greek ideal of what a *school* should be. And in proportion as its range of choice includes activities that are positively good, physically, mentally and spiritually, camp will succeed in contributing to the larger problem of adult leisure later on.

There is always an undertow of distant sociology to contend with in thinking camp. What do we want an eight hour, seven hour, six-hour day for? What are we going to do with it when it gets here? What are we going to cram those extra hours with? What recreations are we going to choose? What relaxations? What avocations, joblets, artistry, schooling?

And I'm more and more inclined to think that the things we learned to like to turn to when we were kids largely determines the direction we turn in later on: craps, cards, hanging around with the gang, shooting, trapping, sailing, canoeing, book-binding, drawing, reading, storying, exploring, riding, movies, prize-fights, sewing circles, receptions, teas, tending babies or hunting bricks for the temple of science.

In selecting the summer camp as a training ground for the feelings toward wholesome leisure-time activities, I am in one sense unfortunate in having to choose an institution thus far limited largely to sons and daughters of the "leisure class," for, however hard their daddies work, they are the kind of daddy who can take a vacation if he wants to, can indulge coin collecting, picture hunting, new automobiles, golf or camping if he likes.

But many of the same principles apply here as will apply to our camp for youngsters of all stations of life in the coming units of our more enlightened educational system, free to all and as necessary a part of training for life as any regular "schooling."

So I take camp Timanous (the boys' unit of the Luther Gulick Camps) as a microcosmic sample, and will concentrate on it, and its activities in lieu of reviewing the wider field of camping in general.

The principles that apply to a boy's camp apply in substance to camps for girls. There are divergencies, of course, but boys and girls of camping age have so many likes in common—the water, swimming, diving, aquaplaning, sailing, canoeing, boating; horses, pets, shelters, fires, games of running and throwing and batting; modeling, drawing, painting, making things of metal and wood; nature lore, woodland hikes, cook-

ing, exploring, gypsy-trips, that the things they differ in are almost negligible when it comes to general principles of direction of desire and the furnishing of opportunities for choice of activity and occupation.

A first class camp must have, to realize fullest possibilities:

1. A location bringing with it (a) good water facilities for water sports (b) woods for play, and to furnish wood for fires, shelters, etc. (c) open space for play and games (d) a small garden-farm for food culture, (e) a barn for horses and perhaps other animal pets, chickens, a cow, rabbits (f) fair play for whichever are the cooling breezes in summertime, (g) isolation, insuring freedom from much intrusion.

2. Sanitary features of (a) pure drinking water (b) thorough and quick disposal of garbage and waste (c) dryness of sleeping quarters (d) relative freedom from bugs, mosquitoes and other summer annoyances of the kind.

3. Housing, simple, primitive but thoroughly protective against rain and storm. Beds simple but essentially comfortable for sound sleep's sake.

4. Thoroughly efficient kitchen equipment, competent cook, adequate assistance, ease of access for supplies, effective and roomy refrigeration.

5. Sports equipment (a) simplest of gymnastic supplies for spare moments—mat, horizontal bar, rings, trapese, (b) sail, row, motor boats as occasion requires, canoes, rafts, diving tower, chute, etc. (c) Horses, wagon for gypsying. (d) Boxing gloves for boys (e) rifle and rifle range, (f) athletic field-equipment if really called for.

6. Provision for hand-craft, be it carpentry, clay, copper-work, drawing, decorating.

7. A definitive program for the accomplishment of definite and, whenever possible, measurable results, physical and mental by each individual boy. Plus a provision for letting the boy see recognized and recorded his own accomplishment (bulletin board, merit badges, etc.)

8. A spiritual standard underlying and permeating all camp activities, with a certain daily formalization, in song, story, prayer, or otherwise to keep the fact of the underlying standard alive in word and action.

9. A directing personelle that will attract to camp the character and quality of boy that will keep pace with its best traditions, perpetuate and add to them.

This last is first in importance, minimizing the importance of location, equipment and even program by comparison, and often compensating for serious lacks among other desirable requirements.

In starting a new camp perhaps the capital item is the establishment, the setting up of traditions. Largely they must be assumed to exist already. Provided a desired tradition is in accord with the fundamental workings of a boy's mental and spiritual mechanism, it can be assumed, and put up to the boys as a thing to be taken for granted. "We are accustomed to do this here"—"it is camp practice to do this"—and the thing goes.

There is a vital difference between routine program and traditional activity. Rest hour, or going to bed for a "sleep" after dinner is a matter of enforced routine, a certain amount of which boys will swallow with the good things of camp. Boys do not invent and perpetuate the "tradition" of rest hour. They soon fall into line, take it as a matter of course, and go through with it without protest—but just announce that rest hour is wiped off the slate for a day and see what happens! Rest hour is an institution, not a tradition.

Sharing marshmallows around the fire instead of keeping them to eat by yourself, is a camp tradition, initiated by the Director, but seized upon and perpetuated by the boys who find it to their own interest, individually and collectively to perpetuate it. It is more fun, more boys share the good things, and the donor gets a cheer and the approbation of his tribe,—and less stomach-ache.

The Director of Camp Timanous had four philosophical principles of camping in mind which he wanted to make traditional with the boys. They were:

1. To tell the truth
2. To obey first, discuss afterwards
3. To hit hard (task, or opponent)
4. To share good things with others.

## 1

Only one boy deliberately lied to the Director during the summer. He did so publicly, declaring that he had not asked to ride in a motor boat when, just a little time before, he had. Publicly he was accused of lying, on the spot. Publicly he had to admit it. He was cut off from the motor-boat ride, kept aloof from the Director for an obviously long time, and admitted to grace again only after probation and a demonstration of genuine willingness to compensate for a grievous wrong. This object lesson sank in under the skin of the whole group. It was concrete and definite.

In court, for the boys administered their own justice (though unconsciously directed by their Chief), a distinction was always made between an exaggeration, minification, slight

distortion or mistaken judgment in regard to truth, and the lie. The boys sensed the difference. There was play and leeway for boyhood pragmatism in regard to abstract truth, but there was no mistaking the selfish and deliberate lie. Court rubbed this in. Councilors and Chief, who, as on a par with the boys, were allowed discussion in court, took these occasions to make patent in words the "tradition" of truth, and if allegory or story helped, it was brought to bear not as an isolated moral lecture, but as an integral play of the court drama that was being enacted.

Bragging was treated summarily.

W bragged. He was officially dubbed "Big Mouth" by the boys and so called until a week before camp closed when the boys, around a little fire in the big tepee voted to burn the name "Big Mouth" on a piece of bark and, with only one dissenting voice, this was done. W. had earned back his name. But his bragging, and that of others, was always distinguished from the lie. The word liar was not used at camp after the first week or so.

## 2

The big war-canoe seated twenty boys. A perfectly safe craft in smooth weather, it was well at least to regard rough waves as dangerous. If boys talk while paddling they cannot hear orders. An order may mean safety or danger for the group. Therefore "no talking." This was a hard lesson to learn. There was always an excuse for words. "Johnny splashed me, Jimmy is out of stroke, Billy's paddle in the way." But these things had to be borne until the next rest period, when they could be discussed. Team work of this sort, all stroking together to the rhythm of a song, or the skipper's "stroke, stroke" brings a discipline of mind and body that is in itself valuable, but it also makes concrete, practical and obviously necessary the rule of "obey first, discuss afterwards." Other camp activities rubbed this in, but the war canoe is the most typical instance. The boys recognized the value of this discipline to themselves, they started it as a tradition of their own, and after a few weeks of practice it was the boys who brought offenders to time for infringing *their* tradition.

## 3

Boxing made concrete the value of *hitting hard* if one hits at all. That slogan of Roosevelt's became fledgling camp tradition, with a starting point in the ring. All the boys looked on at the boxing matches or the "grudge fights," as it was desired that they should all get the benefit of the instruction

that went with the match—hit hard, look squarely in the eye, keep guard up, lean forward, etc.

Charles picked fights with Tom. When caught he was brought by the boys to the ring, at grudge-time, and they battled with the gloves. Charles hit soft, Tom hit hard and straight. By the third round it was customary for Charles to shed tears and quit. That was in early July.

In middle August Tom and Charles were in the ring again. The results of dinging our motto into the ears of Charles began to appear. By the third round Charles was fresh, Tom was tired. Charles was hitting straight and hard. He was heavier and had a better reach—and had learned how. Round four found the tears in Tom's eyes. In round five Tom was ready to quit.

Now the moral effect of this battle was more far reaching than the Director had hoped to be able to measure. Charles was the baby of camp, living a solitary life, attaching himself to older folk when possible and trying to avoid "being the goat."

A week after the victory in the ring six different boys came to the Chief, who was frying bacon, asking for Charles. Something strange pervaded the atmosphere. Boys didn't usually hunt for Charles.

The Chief left his bacon and went exploring. In an old boat on the beach he found some fifteen boys playing pirate. Charles was captain, giving orders, appointing middies, stokers, pilots, mates. Everyone was going to Charles for orders. He was in his glory. His face shone like that of the traditional angels. He was radiant.

That play lasted until dinner time, and it began soon after rest hour, with Charles still skipper. He was hitting his job hard, giving orders hard, scolding hard, just as he had hit hard in his fight with Tom.

Hard and soft began to be catch words in the group, and the tradition took root, not through this fight, or this skipper-ship, but through the persistent injection of the slogan, concretely illustrated into the atmosphere. The tradition began to carry itself.

#### 4

Candy was allowed only when shared with all after meals. Marshmallows were allowed at roasting fires. The tradition of the roast grew. Boys wrote home for marshmallows in preference to all other sweets, and shared them around the fire, learning in the process of spearing them on another boy's stick the truth of its being better to give than to receive.

The court afforded opportunities for generous treatment.

To temper justice with mercy was found to be pleasant, and this, too, began to take root as a tradition.

T came late to camp. He hit W over the eye with a club. Court sentenced him to a hard punishment unfitted to the crime. The Director spoke in court of the unsuitability of the punishment and referred to the custom of fitting punishment to crime (a custom which hardly existed, but which was desirable, and in accord with boy nature, and therefore that "went through") and also pointed out that T was not familiar with the camp tradition that clubs were no longer fighting weapons of man. That tradition was new, but it also took hold. T was grilled before court as to motives and action, confessed his sin and was saved. Two traditionlets were launched that persisted, and another way to be generous was made patent.

At table the tradition of being generous was watered by spoken recognition of generous or courteous conduct, and a pennant was awarded for special persistence in this direction. It was not so much good table manners that was aimed at here, as it was the strengthening of the tradition of generosity in an egocentric little savage, which the boy of eight to eleven usually is.

These are just a few homely illustrations of the way traditions took root and began to grow. Now traditions are the result of a continuum of conduct, they are attitudes and acts repeated by individuals and groups. And the stimulæ that fall on the individuals affect traditions mightily.

Three stimulæ, to use the language of the psychologist, stand out fairly clearly as important in the moulding of camp traditions:

1. The stimulus of the group
2. The stimulus of success
3. The stimulus of failure

The chief value of camp to the boy, as contrasted with however favorable a set of family-vacation circumstances, lies in the stimulus of the group, a thing that no amount of private tutoring, elaborate equipment, individual liberty can take the place of.

### 1

A few boys seemed to wade right through camp without very much apparent reference to the stimulus of the group in the accomplishment of definite ends, while with others the reverse is true.

B swam to the rock (first test) alone, he was cheered afterwards, to be sure, but he went ahead by himself, practicing, until he made the raft all unbeknownst to us. Later he had

swum to the island, then around the larger island, (half a mile) and finally he asked permission to try swimming to Ship Island, a mile away, and, though but eight years old, made it in as good form as the older boys of twelve and thirteen. He would have continued right along for indefinite distances if he had been allowed. It seemed a personal, solitary thing with him, a set of accomplishments that he might as well have undertaken if camping alone with his family.

S tried swimming to the rock only under the most prepared and dramatic of circumstances. Attention of everyone was called to the trial, he advertised it beforehand, seeming to endeavor to bolster himself with the stimulus of onlooking eyes.

M always did his best work when he was the center of attraction, he attempted new things, did old things better and seemed to draw on all his vital reserves when he had an audience, when he was in the crowd.

L was never spectacular, but seemed to feel the admiration of the group, and to respond to it with further endeavors. He watched the chart recording successes in the water closely, made copies of it, wanted the original to take home. He was the best swimmer in camp, but was shy and retiring and silent about it.

Boys attempted the swim to the rock best when in groups of three or four, with others watching. Fear seemed divided up, less concentrated in any one boy. Dislike of public failure added an obvious element, and the competitive atmosphere (though it was not an actual race) stimulated still more.

S, however, would never join a group. He always wanted a single councilor with him, and the track clear for a lonely attempt. But he wanted his attempting known, far and wide.

Many more boys attempted sliding down the chute for the first time when the group was on the raft, than when they were invited for a solitary trial. Taking the first dive, with but two exceptions, was definitely eased by the presence of watchers though W practiced in solitude until he graduated from the crass belly-flop and worked up nerve enough to leap from the tower. B went to the rock alone, practicing dives until he was not ashamed of them.

And here the indirect influence of the group doubtless plays a rôle—the boys are practicing with the group in mind, and do their best work after all, when eyes are upon them.

Boxing is always of a higher order when the group is present than it is in the practice ring. Even practice is helped very measurably by having a number of boys present. Both single pairs with instructor and pair with instructor and groups were tried out alternately during the summer, and the

atmosphere was as different as one would presume it would be under the two sets of conditions.

Such a fact is quite simple and apparent, yet I have had fathers of boys tell me their sons need nothing from camp, they have everything provided at their summer homes, boxing instructor, horses, gymnasium, water, food. I wish they might see the relative intensity of work and play in their own boys under those conditions, and under the stimulus of the group; how much more of their margin of power is used when the gang is around, how close they draw to the very limit of their usually unused forces of will.

And in all this group stimulus, the underlying motive was constantly emphasized of *hit hard*. The group-stimulus, perhaps more than any other factor, helped cement this tradition into an enduring foundation. One cannot measure or weigh traditional values. One feels them in the atmosphere, senses them in boy responses.

## 2

The stimulus of success is closely linked with the stimulus of the group. A boy who is successful in a group wants to stay successful, and that means progressive accomplishment in camp. "Hitting" a thing hard and persistently enough usually brings this to a boy. Success breeds success in all but a very few.

B was a good swimmer to start with, but he tackled each individual water-stunt until he had completed them all and became a Shark. He thrrove on success.

J won his paddle by persistent trying until he reached the goal, but he saw no further than the concrete paddle, rested on his laurels, used his paddle for a sand shovel, lost it to the Chief and had hard work recovering it.

E was told that he could gain weight, improve his angel scapulæ, round out his chest and harden his muscles if he would persist in a regime outlined by his councilor. In a month he gained five pounds, tested out far in advance of his former abilities muscular and found his chest delightfully rounding. (He was most hollow-chested and scrawny when he arrived.) Success drove him still harder into his program. At close of camp his shoulder blades were practically normal, his chest was wonderful to behold (he had the chest, and had only to get it into position) he had gained almost eight pounds, and actually got into games, swims and mischief. He followed his regimen of bed-exercise and table training largely because he felt the success of the effort and was constantly told how successful that effort was. Only an initial attention

was called to his defects, the rest was all harping on accomplishment. He radiated success.

But the real success, as viewed by his Chief, was spiritual rather than physical. A letter came from the boy's mother rejoicing over the boy's changed physical appearance, his surprising improvement of poise, posture, hardness and chestiness. But the real value that the boy had from camp was the attitude of success through having hit his particular problem hard, and stuck to it, hitting hard. This attitude, I believe "transfers" to other fields, "transfers" wherever desire links with will for the attainment of an end. It is this attitude that the camp tradition was launched to cultivate and fix.

And I incline to think that the same traditions, the same attitude, the same habit ought to apply as well to our use of leisure as to our use of working time. I'm hoping that just as there may be transfer of attitude and intensity of effort from the summer camp recreation to school activities, there may be also a return in kind and in modified intensity to these primitive absorptions of boyhood later in life as recreative "rest" and amusement.

But to intensity of effort, we must add technique. A great deal of failure, with its stimulus and its backdrawing, comes through lack of skill, or physical handicaps that limit the acquirement of skill.

### 3

A told us he took boxing lessons from Benny Leonard's trainer. J pummelled him around the ring until A began coughing and gave up.

A was merely too heavy. He had technique, but carried the incubus of twenty pounds overweight. Sheer physical inertia turned his "I can" into an "I can't" that was not uprooted as to boxing, all season.

Training down this lad to normal would, I believe, not only release his technical ability to box well and effectively, but would revolutionize his attitude toward not only boxing but a score of life's activities.

He tried to be helpful in the kitchen. One day he spilled a bucket of water over the floor. The cook told him he was too fat to fetch water, and never to try to help again. He never did—and another "I can't" was registered.

The stimulus of failure in his case was very faint. He failed, and ever so much as he might want to try again and succeed, the fates of adiposity were against him, so he turned to sand forts, shelters, writing letters and other occupations that tended to aggravate his condition of fatness. In working

against these tendencies, and toward the things the boy needed, the Director had to contend not so much with lack of desire as with physical "I can'tness."

On the other hand, in boys whose build was right, failure sometimes acted as a boiler fire inside, keeping up pressure and increasing effort.

W thrived on failure to make a good dive. He grinned at every belly-flop, let every sting act as a spur to another spurt, kept everlastingly at it until he made a dive, dived from higher and higher places until he made the jump from the top of our tower and was cited for "nerve."

J failed to swim to the rock for seven weeks. He "gritted his teeth" as he called it, after every failure, and declared he would make it yet. He had periods of despair, but hope and the sting of failure kept him at the task until, during the last week of camp, it was done. Failure in his case was as consistently persistent a stimulus as there was. There was little marked improvement in distance swimming, it was a matter of lack of hitting hard, keeping at it. One day he tided over that node of failure and got there. The distance itself proved easy after that.

However, his failures never met with recognition as failures on the part of councilor or director. He was always told, and most insistently, that he could do it. He repeated the words, telling himself that he could, and "gritting his teeth" about it.

Whatever values there may lie in the stimulus of failure, it is camp principle to create an atmosphere of success or possible success, and ever maintain it in hope and faith.

This applies as well to technique, as to mere accomplishment of a thing in the gross. "To do the thing in the best way, instead of in any old way," is a camp motto, and a boy is not successful until his dive is first class, until his stroke is A1, until he handles his paddle in good form, until he can build a fire that fits its peculiar occasion or function, until he can roll a poncho or make a hike-bed that is a work of art in the field of comfort. More and more am I convinced that to learn during a summer to do a few fundamental camper-things thoroughly well, is worth more than the happiest variety of sampling experiences.

#### IMITATION

*Imitation* plays an almost ridiculously obvious rôle in camp life, and can be turned to account in the forming of traditions as few other powers may be.

A carpenter bench is a good thing in camp, but it is sterile unless some generic occupation is started spontaneously, or with the appearance of spontaneity, within the group. The

Director's technique here consists in watching his boys and seizing the cue they give.

J built a grotesque little boat with a huge and impossible paddle-wheel. He came to the Chief for a rubber band to make it go. Someone saw him. That afternoon nine boats were under way. Next day the carpenter-bench and tools were made available to B who built a first class boat. A prize was then offered for good craftsmanship. It was found immediately that those who learned to use the tools did better work. The tools were in pressing demand.

Aeroplanes, boomerangs, arrows, cross-bows, rafts, spoons, seem to have their "seasonal" occurrence. Sometimes the initial point can be traced and found, sometimes the contagiously imitative interest seems to come from nowhere. Nurtured while it lasts, it helps enormously to fill camp time profitably. Neglected it peters out or becomes banal.

Spoons forgotten on a camping trip. The Chief carved one of driftwood. Others followed, and competition arose in craftsmanship. No carve, no spoon to eat with, "ghoulash" for supper, not much fun fingered. Ergo—an epidemic of spoons roughly hacked out, but with a tide-over to the workshop where creditable spoons were made, and later even decorated and kept as camp mementoes.

So spoons could easily become a camp tradition, saving tableware, making a tool intensely personal, developing the spirit of art-craft and channelling off the mere whittling instinct into definitely constructive uses.

#### NATURE LORE

Not "nature work" or "nature-study," but a concrete, seeable, handleable collection of bugs or butterflies, mounted on wooly cotton and pressed against passegpartout'd glass, grounded the tradition of nature lore.

It was simply "customary" to make a collection of butterflies.

L made the first collection, exhibited it in its glass box, got credit for it on the bulletin of achievements and—set the pace.

L was one of the brightest boys in camp, twelve years old, clever with his fingers as well as with his brain, a sure shot with the net and possessed of an enthusiasm for capturing things.

But the two youngest boys in camp made little bungling collections, and were helped to frame them, and were just as proud and happy.

There was nothing savoring of the "class" in nature study.

Boys went up to the farm if they wanted to, swung their nets, took messes of bugs and butterflies to the Nature Lady "Mother Nat" who told them what they were, helped classify and arrange them and, when their names and something of their habit and use or un-use was learned, she recommended them for nature honors at headquarters.

A class in nature study would not become tradition. Making a collection for exhibition on exhibit day, and then to keep it for good, can and does become traditional, goes off spontaneously and needs only a slight attention of encouragement for the boys who do not so readily "take."

Learning trees, ferns, fungæ, mosses, flowers, sea-beach flora and fauna are semi-traditional. The impetus of winning honors through these acquirements, the necessity for frequent reminders, the more nearly intellectual nature of the task (or fun) make this part of nature-lore a borderline case between tradition and institution or program. "Have you learned your trees yet" is not nearly so electrically important a question as "have you swum to the rock" or "have you got your collection yet?"

Boys will classify themselves according to native ability. The difference between Camp classification and that of our schools is this: in camp, ten boys of ten grades of ability may work in the shop, or model at clay, or go hunting bugs at the same time and under the same (teacher) councilor. They belong to the same working group, but by their fruits they shall be known, and on the camp record they find themselves classified according as they merit classifying.

L made a collection of nine butterflies, three male and three female of three different species in a week. J collected two butterflies, a moth and a grasshopper. Both accomplished these results in the same week and on the same nature-trips. But L put himself in an honor class of *Naturists*, while J had yet a long way to go.

And to make the honor of *Naturist* carry with it so much that is attractive to a boy that J will want to come back next summer and try to get in that class, is not only to add strength to Camp's magnetism, but actually to increase the boy's initiative and stick-to-itiveness whenever he is out on the job.

The *Naturist*, returning another summer, does not isolate himself in a "class," he assumes some of the functions of a councilor, teaches those boys who like him and want to walk with him what he knows about birds and butterflies and so makes his own knowledge better tested and vital, while filling at least some of the boys with a desire to emulate him. With the *Naturist* rank go privileges that distinguish the boy, such

as greater freedom of choice in his walks and studies, night-time opportunities for nothing or listening in the silence for new voices heard only at night, permission to sleep in tree-house, and other rights granted in recognition of his good work done.

And, having "majored" so to speak in Nature Lore the summer previous, he may turn to some new elective honor, or honors, Woodcraft, Watersport, Marksman, Athletic, etc.

#### FEAR

Camp policy nearly merges with camp tradition at times, is one with it many times. A cardinal principle of camp is never to force a boy beyond his desire. To stimulate, to encourage, to make tasks and fun attractive, to lead, magnetize and even gently push, yes, but never to push hard, or pull too strongly. To frighten a boy in the water, hurrying to get him over an initial fear, works much more damage than the short cut is ever worth. But even this traditional policy must not become too rigid.

K was afraid to duck his head under water at morning dip. A week of observing other boys worked no change in his attitude toward the dangers involved. His councilor was allowed to initiate him into the mysteries of under-water, and from that morning on, he ducked.

But this lad was an exceptional case, and called for special treatment in many directions.

He was afraid of horses. He wanted to ride but could not bring himself to mount a horse. After considerable study by the Director and Council, despite his tears and howls of protest, he was mounted and held in the saddle. Soon he stopped crying and began to smile. In five minutes he was thoroughly enjoying the new experience. As soon as he was genuinely happy in the saddle, he was taken off and was not allowed to ride again until the following week when he mounted horse himself and felt thoroughly at home.

There may always be one or more cases of special "intellectual timidity" where an idea has been lodged in the mind about the danger of a thing like water, horses, rifle, boxing. K rationalized his fears and feared his rationalizations. He had heard or learned that horses were dangerous (no history of a previous fear, or scare could be traced) but he merely stated in cold terms that horses were dangerous, not that he was afraid of horses, and hung to the belief until his rather forcible experience changed his mind, when his feelings followed suit.

Usually, however, it is camp policy to be long patient with

initial difficulties, and never to force a boy into anything beyond power and desire.

#### SONGS

Imitation in constructive directions obviates much of the merely negative in discipline and law. There was no "don't carve your initials in the furniture and trees" at Camp. A boy was selected early as having done good work, he was awarded a paddle, and the right to decorate it with his sign or symbol, a symposium on symbols was held, interest in symbolic trademarks or signs grew warm, and the natural tendency of boyhood to appropriate landscape and property in his own deep carven name was merely shifted to the decorative element in the paddle tradition. Camp was singularly free from annoying petty desecration and the only specific reference to the matter cropped out in a song of a "would be camper"—

He thot the lake would bite him if it got above his knees,  
 He didn't know mosquitoes from potato bugs or fleas  
 He used to carve initials on the furniture and trees,  
 But he's never been to Camp Timanous!

Song merely followed action and encouraged imitation. Morning dip, taking a dive, paddling in tune, brushing teeth, piling wood, sleeping out on the pine needles, getting licked in a boxing match—these and many more, found their way into classic camp songs which doubtless had their sub-conscious effect and added splendidly to the camp morale, or "quality of the spirit of the whole."

"He told of the boxing there, bout after bout,  
 He said that the best fun was getting knocked out"

— to the rollicking tune of "Blow the Man Down" and linked with other versings that glorified work, success, and failure well taken, established a standard for camp minstrelsy by which all songs could be tested in the future. The song-tradition was pitched high with a definite purpose in the plan and spiritual drive of the whole.

#### COURT

To make "court" serious was a delicate bit of pitching tradition to just the note desired. Humor must have its place, for even a court must be a living thing, but to make boys realize that this playing at grown-up court procedure was serious business, that it was their own instrument of justice and mercy, was the vital point.

Court tried cases of major discipline. A Judge presided and a jury sat. Lawyers might be chosen, or plaintiff and defendant might plead their own case. There was privilege of final appeal to the Director, but this was seldom, if ever, resorted to. The boys worked out their own cases generally along lines of sound common sense. The fact that their decisions were sometimes guided by participation of councilor or Chief in the court procedure did not seem to make them less the boys' own. They gradually came to believe in the court as theirs, and appealed to it as theirs and took keen interest in its procedure, and in taking their part.

Court uses the stimulus of the group to draw out one's best in defense and attack. The competitive element enters, success gives zest, failure either discourages or puts more fight into a lad, depending largely on his native temperament. The boys learn to talk on their feet. Accuracy of observation is tested in cross-fire of questions, exaggerations have short life, succinct statements of truth swing their full value into the fray, truth itself is tested and found solid. Half truths find hard sailing under cross-examination and tears often take their place.

Infrequency of session is life-blood to court tradition. Only cases of real merit, where it is worth the time and effort of the group, are brought up. Others are squelched quickly, or die before the Court can be called.

#### PADDLE-SHIELD

This camp, on an inland lake, played up water-sports supremely. Canoeing, boating, diving, swimming, war-canoeing and longer trips here and there on the water meant the focusing of much traditional matter lakeward.

The canoe-paddle was chosen as a focal point. A boy, through variety of effort to accomplish definite items on the camp program might earn for himself a blank, unvarnished paddle, like the blank shields of King Arthur's fledgling knights.

Through further effort and more accomplishment, he earned the right to decorate his paddle with a symbol, or sign which he had chosen as his own after earning the right to possess a symbol. As a special reward for extraordinary merit in his course of accomplishment, he was entitled to decorate the reverse of his paddle with the symbol that stood for his Camp. He might then decorate and varnish his paddle, after which it was his to use and to keep.

This tradition began by giving paddle, symbol, camp symbol all at once, and it was found that just in proportion as a paddle

was made hard to attain through additional effort for the various elements, just so much harder did the boys work to earn it, therefore the gradation of earnings scale.

The paddles also focussed the art-work of the boys. Some needed much more assistance than others. Some boys drew and colored their symbols and decorations many times on scratch sheets before they were allowed to attempt, with assistance, the decoration of their paddles. The way one boy guarded and treasured his decorated paddle was a joy to all who beheld it.

But the most interesting single tradition bearing on the philosophy of Camp, both from the sociologist's and the educator's view points, was the Timanous tradition.

Camp was named after one who lives now only in memory, tradition, spirit. The weaver of Camp songs had never known him face to face, but felt his attitude, his spirit, if you please in the atmosphere:

And for the boys who followed him he fought with all his might,  
He was a leader brave and true,  
And he won the hearts of all the folks who came within his sight,  
And of some of us who never saw him, too.

Only two of the boys in Camp had known Timanous (an Indian name for Guiding Spirit given to Doctor Luther Gulick) the rest gathered from a word here and there, from references to his personality and work at morningsong and reading exercises, from occasional anecdotes relating to his life and from the portrait that hung in the main bungalow, that Timanous was a history, a point in the past from which traditions ramified, and abiding influence in the present, though hard to explicitly define, and more felt than understood.

I may have read it into the atmosphere myself, but I felt that here, in actual practice, within a group of "little savages" one could note the evolution of the ancient tribal God, or great ancestor, or revered Chieftain who lived on through generations of traditional heredity, speaking through the lesser and more immediate leaders of the present time.

This very fact of personality gave body to the traditional background of Camp in its spiritual essence, for, though seldom referred to consciously as the embodiment of such traditions as I am making the main theme here, it was generally felt that he did embody them, stood for them, gave them their initial 'velocity and would be pleased to find them working out today.

And this has appealed to me as a most wholesome, concrete and uniquely personal hero-myth. For myth it is carrying the core of solid truth that all perpetuated myths are centered by, and being here essentially local, palpably possessed by the immediate group, or tribe.

Fortunately "Old Chief Timanous" as Camp song had made him familiar to the boys, had left a wealth of immediately applicable camp tradition-stuff that could be known as coming directly from him through those leaders and councilors who had from him inherited ideas, ideals and enthusiasms. He had also left his written words, in books, and these were read by councilors who read with sympathy, and who could not help radiating something of the same spirit that animated those words when they were written.

Two of the council had vitally experienced in action the substance of one glowing paragraph which bears quoting here, so germane to the subject it is:

"Friendships demand the focussing of the attention upon each other—there is no friendship without acquaintance. For this reason doing things together, having mutual interests, is a common mode for the formation of friendships. There seems to be something almost magical in the common things of life to draw people together. Doing those things together which all the people of all the world have done together; experiencing the common feel of earth under one's feet, the look of green trees, the touch of fresh water; cooking in the open; sleeping on the ground about the camp-fire; carrying the pack; standing the strain of the long trail—somehow human nature seems to come right to the top and look around under such conditions as these. You somehow don't need to become friends—you just are friends . . . It seems as if sham, insincerity, false courtesy and other pretenses are swept away by the sweat that pours from the body and you and he stand before each other for what you really are . . . Under such conditions souls fuse."<sup>1</sup>

And so, through councilor and Chief acting out in their several ways as much of the spiritual tradition laid down for camping by Timanous as they might, the myth was nurtured and has begun its growth. And here Camp Tradition and the larger matter of Leisure Time draw close together.

Here we have much of the spirit of a personality who has lived out, spoken and written out a great deal of the very best not only of camp lore, but of life-lore itself, pouring itself into a dynamic mould, the camp unit. We have councilors who have lived through such friendship forming experiences

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<sup>1</sup> The Dynamic of Manhood. Dr. L. H. Gulick.

as Timanous has described, and happy to see other boys tasting the same rich joys. We have boys subject to these friend-forming influences in the most natural of primitive circumstances; boys doing these things together because they have chosen to, and working into the texture of their inner natures the very stuff of right conduct and of happy human relationships.

And if a man has had this simple philosophy of the out-of-doors and its myriad possibilities of enjoyment ingrained early in his nature, will we not have a more spiritual world to live in? For after all, the very elements of spirituality are here in the doing of wholesome, happy things together because we may choose to do them and the reward in the doing is joy, and peace, and freedom and purity of purpose and all the cardinal points of any attempt at defining spiritual life. And to these concrete things will a man turn in later life when he has a chance, and to these he will want his children to turn, and will work for their opportunity. *Scholé*—leisure and opportunity for happy, wholesome choices will get back its share in our educational scheme of things, and summer camp will have made its larger contribution to the moulding of American character.

## IMPRESSIONS OF THE PSYCHOLOGICAL SESSIONS OF THE INTERNATIONAL CONFERENCE OF WOMEN PHYSICIANS

By PHYLLIS BLANCHARD, Ph. D., Clark University

The International Conference of Women Physicians, held in New York Sept. 15-Oct. 25, 1919, by invitation of the Y. W. C. A., cannot but be of interest to psychologists, for two entire weeks of the program were devoted to a presentation of psycho-analysis and its application to industrial and social problems. That the interpretation of this new psychological movement was clear and accurate is vouched for by the names on the program:—G. Stanley Hall, Beatrice Hinkle, Frink, MacCurdy, Kempf, William White, Constance Long, Lucile Dooley, et als. Leland Olds, with his application of the principles outlined by these speakers to industrial unrest, made a unique contribution, while Dr. Eleanor Bertine emphasized their bearing on the problems of sex education and social morality in a thoroughly scientific and impartial manner.

It may be well to note briefly some of the most significant papers,<sup>1</sup> and point out some of the obvious conclusions to which they lead.

Dr. Hall and Dr. Hinkle in their respective papers *Points of Difference between Men and Women, Inherent and Acquired*; and *Arbitrary Use of the Terms Masculine and Feminine*, represented very different viewpoints. For Dr. Hall there are distinct differences between men and women, and if modern woman attempts to use her newly acquired economic and social power in imitation of man-made patterns, she is betraying her biological mission. The whole tendency of the feminine nature is to subserve the interests of self to those of the race; she is innately the great Eugenic force, and her task is now to work consciously for the welfare of future generations as she has always done unconsciously in the past.

On the other hand, Dr. Hinkle, following the Jung<sup>2</sup> division of mental types into the introvert and extrovert classes, insists that there is no norm which can be called typically masculine, none which can be called typically feminine. Tradition

<sup>1</sup> See list at end of article.

<sup>2</sup> Jung, C. G. *Psychologie der Unbewussten Prozesse*, 135 pp. Raschen & Cie. Zürich, 1917.

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has insisted that the male be the fighting male, the woman the protective maternal element of society, but in reality woman may be as aggressive as man,— it is all a matter of individual difference, and has nothing to do with sex. The introvertive, intellectual mind may belong to either man or woman, and the same is true of the extrovertive, emotional nature.

If we think the problem through, we can see that these two views are not so fundamentally opposed, as appears at first. We cannot but admit that the female has had imposed upon her throughout a long phyletic history, the necessity of sacrificing individual interests for those of her offspring. A decrease in the number of forces working for the maintenance of this type by natural selection has permitted an increase of aberrant feminine types, until in our present society there are many women who approach what must once have been the essentially aggressive masculine type, while many men have lost their distinctly masculine traits and approximate the more passive feminine type. The physiological basis for such a change is adequately explained by Blair Bell in his study of the endocrine balance, in which he shows that the degree of masculinity or femininity depends in large measure upon the secretions and hormones produced by the ductless glands and their interaction.<sup>8</sup> As Dr. Hall has insisted, the biological sex differences are much deeper and more fundamental than any arbitrary division according to type.

There are certain conditions in modern social life which tend to emphasize the individualistic side of woman's nature and to repress her primary feminine instincts. The vast number of women who cannot find an outlet for their natural desires in love and motherhood and who enter into the business world find no opportunity for the sublimated expression of their altruistic tendencies, but are forced into the ruthless methods of competition which prevail there. Being thus compelled to repress their fundamental tendencies, they build up a defense mechanism which stamps their reaction patterns with all the characteristics traditionally ascribed to the male organism, and which are still utterly foreign to the real nature of the normal woman.

As a whole, the conference was less concerned with any hypothetical question of a masculine and feminine type, however, than with the more practical issue of obtaining an understanding of the psycho-analytic principles which might be applied to the economic and social problems of the day. One of the appalling things their medical practice had

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<sup>8</sup> Blair Bell. *The Sex Complex*—233 pp. Tindall & Cox, London, 1916.

brought home to the members of the conference was the amount of sexual perversions in modern life, and the need for a new social criterion of sex relationships. The possibility of the roots of abnormal sexual practices reaching back into infancy was explained by Dr. Blumgart, who showed how infantile reactions originally a normal expression of the nutritive instinct may become associated with pathological sexual and eretic tendencies in neurotic children, leaving traces which are never wholly eradicated in after years. Ordinarily these strictly infantile perversions, such as auto-erotic activities, eretic sucking, anal-eroticism, and urethal-eroticism, become sublimated as the child grows older, so that aside from the personal suffering and temperamental idiosyncracies which they entail, they are not a vital factor in the continuance of the race except as they are passed on to succeeding generations through heredity.

More serious, from the Eugenic standpoint, is the problem of homosexuality, which Dr. Constance Long, Dr. Mary Gordon, (both of England), and many American doctors consider much more prevalent, particularly among women, than has hitherto been generally admitted. Instead of placing all the emphasis on the biological side of the question, as did most of the speakers, and treating it as a psychic arrest of the libido in its development, it is to be suggested that, certain economic and social factors be taken into consideration. To-day as never before, women are refusing to marry, and the sex instinct, denied its normal love-object in a member of the opposite sex, reverts to some female companion. It was pointed out that when man becomes isolated from intimate relations with women, as happened in the army training camps and in the navy during the present war, the same homosexual tendency becomes manifest. The ordinary unmarried woman is quite as isolated so far as any normal sex life is concerned, and the libido thus denied its natural outlet, seeks the love object nearest at hand. Now that the opportunity for intellectual and economic equality with man has enabled woman to put on a semblance of masculine traits, such a fixation upon another woman has become particularly easy.

What are the remedies for this abnormal condition in the individual and in society? First of all, a recognition that co-education, whatever its disadvantages, does tend for a normal transference of the libido to the other sex at the critical period of adolescence, and the encouragement of co-educational schools and colleges in place of institutions where young men and women are isolated from each other. With this, there must go a new type of sex education, which shall teach the adolescent

to understand his own instincts and impulses as well as his duty to society and to the race, so that instead of being subject to repression through a moral code dogmatically imposed from without, the adult man or woman will be able to shape his or her conduct in harmony with the best biological and social expression of the fundamental human instincts.

Having a somewhat similar origin to homosexuality, in that it is a result of an imposed control of the natural expression of the sex instinct, masturbation, by Dr. Frink's statement, is even more widespread. The habits of masturbation in the adolescent boy, or of the erotic revery and fantasy in the adolescent girl, are not physically detrimental as popularly supposed, however. Yet if practiced in excess, and carried over into adult life, they make for certain anti-social characteristics of the personality which may endanger happiness and prevent proper social adjustments of mature years. It is the economic obstacles in the way of early marriages that tends to prolong the sex tension inordinately, and leads to the carrying over of this habit beyond the age when the boy and girl, although sexually mature, are still incapable of producing eugenic children. During these first years of adolescence, when they are still too young for parenthood, it is more beneficial than detrimental from the larger social aspect of the question, since it is preferable to a normal sex-relation if the latter results in inferior children.

Another complicating factor in the development of the sex life is what Dr. Charles Lambert termed the *Family Drama*. Often, the possibility of a happy marriage depends upon finding a mate who will approximate the unconscious father or mother ideal. Too much love lavished upon children, especially upon those of neurotic tendencies, is apt to create such a fixation, and is thus seen to be as injurious as the lack of any affectionate home life. This same principle was put into concrete form by Lucile Dooley in her analysis of Charlotte Brontë, in which she showed the dominance of the gifted author by a father complex which shaped her career and molded her literary productions in its pattern.

Although a rigid repression of the sex instinct with no correlative sublimation has led to the abnormal expressions of the love-life enumerated above, the function of repression in itself has been of great biological value to the race. According to Dr. MacCurdy repression became necessary on the physiological level aeons ago, when our stirp was evolving through the long stages of animal life. For example, when the amphibian made the radical change in its mode of life which enabled it to emerge from its primeval aquatic habitat,

the vast difference between its larval and adult stages made a great deal of repression imperative, lest the stimuli of the new environment be responded to with the old reactions, now wholly inappropriate. Thus the function of repression was for a long time of life and death value to the species, so that it is no wonder that it was preserved by natural selection, and became an integral part of the psyche.

In another paper, Dr. MacCurdy showed that besides the sexual instinct and its repressions and sublimations, there are certain other fundamental human motives coeval with the sex impulse and quite as potent factors in conduct. One of these is the egoistic impulse made familiar by Adler<sup>4</sup> as the will-to-power; the other is the gregarious instinct analyzed by Trotter.<sup>5</sup> All through human history, these three groups of motives, however different may have been the expression at different periods, have been the chief determinants in shaping the destinies of mankind. For instance, from the psychological viewpoint there is little difference between the religious attitude of primitive man and the scientific spirit of modern times. Both religion and science are closely related to the sexual and egoistic instincts, and both attempt to explain the mysteries of life and of the universe. Moreover, just as modern man tries to control his environment through the application of scientific principles, so the savage attempted the same feat by means of the charms and magic ceremonies of his priest and medicine man.

Since these motives of sex, power, and gregariousness (to which are attached the other instincts, as fear and anger), have always been the basic factors in human conduct, it is time, as Dr. William A. White remarks, to study them in their various expressions, with a view to making them conscious and bringing them under rational control. The psycho-analysts have been doing this for some time in the case of isolated patients, but it is only recently that any attempt has been made to use the same methods in the diagnosis of pathological social situations. Most noteworthy, therefore, is the keen analysis of the present labor unrest presented by Leland Olds in his study called *Labor and Health*. In order to understand Mr. Olds' work in its fullest significance, we must first review Kempf's outline of the *Physical Basis of Personality*, which is as vital for a complete interpretation of the labor problem as a knowledge of the psycho-analytic doctrines.

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<sup>4</sup> Adler, A. *The Neurotic Constitution*, 456 pp. Moffatt, Yard, N. Y. 1917.

<sup>5</sup> Trotter, W. *Instincts of The Herd in Peace and War*, 213 pp. Unwin, London, 1916.

To Kempf's mind, the longings recognized by the psycho-analyst as the deepest forces of life,—hunger or self-preservation (also expressed in the will-to-power), sex, gregariousness—are fundamentally cravings of the autonomic nervous system. More simply stated, each one of these desires has a definite physical basis in a painful spastic tension of the involuntary muscles, which makes itself felt by way of the autonomic nervous system. In order to satisfy these unconscious autonomic cravings, the central nervous system and the voluntary muscles were developed, so that the organism might easily move to a new environment more suited to its physiological needs. These simultaneous autonomic cravings form the basis of the "conflict" constantly alluded to by the psycho-analyst, and in the struggle between them, the stronger find satisfaction, repressing the weaker. As soon as the dominant craving is satisfied, however, the others rush forward, and the fight for right of way begins anew, so that our reactions are being constantly determined by the spastic tensions of the involuntary muscles.

There are certain conditions in the life of the labor classes which tend to prevent satisfaction of the autonomic cravings of the personality, and it is in this unfortunate circumstance that Mr. Olds sees the underlying cause of labor unrest. Not only are the nutritional needs of the organism improperly supplied in the case of the working people, but sex longings, and even the excretory organs are denied adequate relief. (One of the things labor asked for during arbitration by the War Labor Board was hygienic toilet facilities and the opportunity to use them when necessary.) Not only have a few people controlled the stimuli which could satisfy these fundamental cravings, but they have established the standards which act as social qualifications of them, so that certain kinds of food, certain types of love-object, are demanded, and the possibility of obtaining them becomes even more remote.

In accord with the principles outlined by Kempf, these unsatisfied cravings have been expressed in a constant abnormal spastic tension of the involuntary muscles, which has resulted in a lowered resistance to disease on the physical side, and a feeling of unrest and compulsion to seek environmental changes on the psychic side. This effect has been cumulative from generation to generation, until we see its climax in the present industrial situation, with the dissatisfactions and strikes of the workers multiplying rapidly on every hand.

In psycho-analytic terms, the physical condition which has been produced in the laboring classes as a result of this over-long autonomic tension, has become the basis of a very definite

inferiority complex, which has been reinforced by the workman's attitude to his employer. Before the day of the labor union and the general strike, the workman had to approach his employer in a supplicating attitude, and this, too, was the cause of abnormal muscular tensions and an additional factor in the formation of the inferiority complex. Moreover, the lack of security for the future ever present in the realization that at any moment business may become dull, and work and wages be taken away, helps to complete the vicious circle which means an unendurable feeling of inferiority.

In the light of this analysis, it becomes clear that the unconscious motive of the labor unrest is the desire for power in order to satisfy the fundamental autonomic cravings and remove the painful spastic tensions implied in their existence. The laborer needs to be freed from all the repressions that have been imposed upon his personality. He must be given a life which will permit full expression of the fundamental human tendencies. Until we can devise an economic system which will provide this, we shall never find a final solution to the labor problem.

It was in reaching this conclusion that Olds struck the note which was predominant in all the discussions of the new psychology,—the principle of self-determination based on self-knowledge. Whatever the difference of opinion on minor points among the psychologists, to this they were agreed: that the time has come to do away with superimposed rules of conduct in every part of the social system, whether in the sphere of labor, or religion, or sex relationships; and to replace dogmatic control by means of taboos with an individual morality founded on a truthful interpretation of human nature, and an understanding of the relation of the individual to the social organism of which he is a part. To any student of psycho-analysis there appears to be no other ultimate solution for our difficulties than the establishment of such a biological and social philosophy of life as a guide for human conduct.

#### IMPORTANT PSYCHOLOGICAL PAPERS PRESENTED AT THE CONFERENCE

The New Psychology.....Eleanor Bertine, M. D.  
Points of Difference between Men and Women, Inherent and Acquired.....G. Stanley Hall, Ph. D.  
Outline Description of Personality...Geo. S. Amsden, M. D.  
Arbitrary Use of the Terms Masculine and Feminine, .....Beatrice Hinkle, M. D.  
The Place of Sex in Life.....Constance Long, M. D.  
A Study of Human Motives.....John MacCurdy, M. D.

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The Function of Repression.....John MacCurdy, M. D.  
The Family Drama .....Chas. Lambert, M. D.  
Auto-Eroticism.....Horace W. Frink, M. D.  
Analysis of Charlotte Brontë.....Lucile Dooley, M. D.  
Personality and Will in the Light of the New Psychology.....Beatrice Hinkle, M. D.  
Sexual Life of the Child.....L. Blumgart, M. D.  
Physical Basis of Personality.....E. J. Kempf, M. D.  
Extending the Field of Conscious Control..Wm. White, M. D.  
Labor and Health.....Leland Olds  
Inner Conflict and Social Unrest.....Mr. Corey  
Rôle of Constitutional Makeup and Personality in Hygiene .....Dr. Richards  
Maladaptation and the Neuroses ....Edith Spaulding, M. D.  
Delinquency as a Reflection of Certain Social Settings,  
.....Bernard Glueck, M. D.

## BOOK NOTES

*Mind and Conduct.* By HENRY R. MARSHALL. N. Y., Scribner, 1919. 236 p.

Here the author has gathered together in a single volume the discussion of certain problems relating to human conduct to which his attention has been turned in the course of his psychological studies, and which were embodied in the Morse Lectures which he gave at the Union Theological Seminary. The first is on the Correlation of Mind and Conduct and discusses consciousness and behavior, instinct and reason, and the self. Part II is Some Implications of the Correlation, under which heading he discusses creativeness and ideals, freedom and responsibility. Part III, which treats of Guides to Conduct, takes up pleasure and pain, happiness, intuition and reason. There are two appendices, the causal relation between mind and body, and outer-world objects.

*Natural Food and Care for Child and Mother.* By SUSAN HARDING RUMMLER. Chicago, Rand McNally, 1919. 298 p.

This work is based on the belief that whereas each new human being is in a measure a law unto himself, there are certain fundamental principles of right living which are true for all. These are: (1) Nature may be approached but never surpassed; (2) Nature presents a law, kind and forgiving, although in the main immutable; (3) obedience to the laws of Nature tends towards Health and Happiness; (4) disobedience to the laws of Nature brings unnatural results, even disease and death. So we have the following parts: The Prenatal Care; Care of the New-born Infant and Mother during Confinement; The First Year for the Baby and Mother; Artificial Feeding; Weight, Growth, and Normal Development; The Second Year; The Child from the Age of Three to Ten Years; Dietetics and Recipes; and Miscellaneous. The book is very practical, for the author is a Ph.B. and the mother of four children.

*The Psychology and Pedagogy of Anger.* By ROY FRANKLIN RICHARDSON. Baltimore, Warwick and York, 1918. 100 p.

This is number 19 of the Educational Psychology Monographs edited by J. Carleton Bell. The substance of it was originally presented as a Clark thesis. After an introduction, the author considers in four chapters the following topics: Mental Situation Stimulating Anger, Behavior of Consciousness, Disappearance of Anger, and Educational Function. He appends an interesting bibliography that is well up to date. The merit of this work consists in the many original records kept mainly by a number of friends of the author of their own experience with anger, not so much of clonic outbreaks as of the fainter irritations and mild chronic indignation that is so common to some temperaments.

*The Blind. Their Condition and the Work Being Done for Them in the United States.* By HARRY BEST. N. Y., MacMillan, 1919. 762 p.

This is a very excellent and much-needed work for we have no comprehensive study in this field to date, and the author has been painstaking and conscientious. We only regret that he refrained from entering the international field, and still more that he did not take more account of the new work done for the blind occasioned by the war.

The book is divided into seven parts, as follows, each subdivided into many chapters: General Condition of the State; Blindness and the Possibilities of its Prevention; Provision for the Education of Blind Children; Intellectual Provision for the Adult Blind; Material Provision for the Blind; Organizations Interested in the Blind; and Conclusions with Respect to the Work for the Blind. There are valuable appendices listing the schools, homes, and industrial establishments for the blind.

*Verse for Patriots.* Comp. By JEAN BROADHURST and CLARA L. RHODES. Phil., Lippincott, 1919. 367 p.

We have lately awakened to the consciousness that there are those among us who are not of us, and we shall probably make larger demands for teaching patriotism. It cannot be exactly put into the curriculum as a required subject, for this leaves the student cold. Neither could the appeal be too direct because youth rejects such an attack on his emotional nature. The best way to secure patriotism, then, is to stir the imagination. Just this the authors attempt to do, much of the book consisting of verse describing thrilling deeds of individual heroes. The idea is certainly excellent and timely, and its execution seems to be worthy of the spirit that prompts it.

*American Leaders.* By WALTER LEFFERTS. Phil., Lippincott, 1919. 329 p.

A score of Americans are grouped here in three rubrics, viz., those who helped to make our country independent, those who helped to make it strong, and those who helped to make it larger. The stories are well-told, but there are perhaps a couple of dozen illustrations of a rather modest not to say cheap order. The idea, however, is an excellent one, although it is a far less ambitious attempt to give biography the importance it demands in the school than various other efforts. The names are well-chosen. We ought to have more and better books of this sort.

*Christ as a Teacher.* By JOHN W. WAYLAND. Boston, The Stratford Co., 1919. 70 p.

This little book is made up of seven talks to normal students and teachers of Sunday schools. The topics treated are Truth and Method; His Method; His Aim; The Matter of His Teaching; His Pupils; His Life; and His Consciousness of a Mission. The author does not differ so much as we should expect, or hope, from the stock treatises in this field. It is very orthodox. While to our thinking there is a very tempting opportunity for various original contributions and very effective work to be done under this title, the author's pedagogy is far more good than great.

*Applied Economic Botany.* By MELVILLE THURSTON COOK. Phil., Lippincott, 1919. 261 p.

This book is based upon actual agricultural and gardening projects and contains one hundred and forty-two illustrations. It is in the Farm Life Text Series edited by K. C. Davis of Cornell. Although there are many treatises on botany, this is somewhat unique and in a sense fills a vacant field by being practical. The first part is devoted to plant life and the second to the most important families of economic plants, with special exercises. The effort is to give Botany again a new and better place in our educational system.

*Deficiency and Delinquency. An interpretation of mental testing.* By JAMES BURT MINER. Baltimore, Warwick and York, 1918. 355 p.

The work contains twenty-two tables and nine figures, and the book is divided into two parts, (1) practical, and (2) theoretical considerations. Under the first the chapters treat of the function of a scale in diagnosis, the percentage definition of intellectual deficiency, what percentage is feeble-minded, adapting the percentage definition of the Binet-Simon, testing deficiency, checking the Binet diagnosis by other methods, school retardation among delinquents, a comparison of school tests and the Binet tests, etc. Part II treats of the theory of the measurement of mental development and quantitative definitions of the border-line life. An interesting bibliography of tested delinquents is appended.

*Education in Ancient Israel to 70 A. D.* By FLETCHER HARPER SWIFT. Chicago, Open court, 1919. 134 p.

Most treatises on Hebrew education in English are very out-of-date or inadequate, and the author of this book thinks his is the first attempt to give education in Israel the broad treatment that has been accorded to the education of other ancient peoples. In no people was this problem so difficult.

The book consists of six chapters, viz: The Native or Pre-exilic Period; Education During the Native or Pre-exilic Period; General Survey of the Period of Reaction to Foreign Influences, 586 B. C. to 70 A. D.; Education in the Family after the Exile; Education in School and Society after the Exile; and Woman and the Education of Girls.

*Hidden Treasure.* By JOHN T. SIMPSON. Philadelphia, Lippincott, 1919. 303 p.

This is a novel with a purpose, viz., to incline boys to stay at home on the farm. It describes the youngster, Bob Williams, coming to work for his uncle on an old farm which the latter had started by the old methods, and bringing with him enthusiasm and imagination enough to search for "hidden treasure" there. The boy, who had had a year at agricultural college and kept in touch with the latest bulletins on the subject, was constantly suggesting new ideas, at first violently repudiated by his uncle, who was somewhat skeptical of new methods of doing old jobs. A sandpit which heretofore everybody had used freely, Bob made a source of income by charging fifty cents a cubic yard for the sand. As a railroad was being built, they made a great deal of money in this way. His next step was to bargain with the contractor to dig a ditch, build a new dam and a new road. He had the pond drained and converted into a productive income-yielding cornfield. A progressive banker loaned money, and a manufacturer of tools decided to help him in making it a model farm. The final step in the regeneration of the old place was the building of a

new house and barn, to say nothing of the installing of electric lights, etc. At the close of the book a city girl, who has visited the farm during the summer, becomes infatuated with both farm life and the hero of the story, and they marry and have a very prosperous farm of their own.

The story element of the book is meagre and clumsy, but the interest of it lies in the fact that it describes all kinds of new processes and machines until the reader feels that he could manage a model dairy, put up concrete stables, and all the rest.

*French Educational Ideals of Today.* By FERDINAND BUISSON & F. E. FARRINGTON. *Yonkers-on-Hudson*, World Book Co., 1919. 326 p.

It was realized at the International Congress on Education at Oakland, California, in 1915 that although the systems of France and the United States were animated by a common inspiration, they were ignorant of each other's purposes and ideals. To bring home French ideals to us the editors have selected and printed extracts from between thirty and forty prominent French writers on different educational topics which are believed to present French ideals in general and to some extent special problems.

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